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1917

ADDISONIA

COLORED ILLUSTRATIONS

AND

POPULAR DESCRIPTIONS

OF

PLANTS

VOLUME 2

1917

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CONTENTS

Part 1

MARCH 31, 1917

PLATE		PAGE
41	Nolina texana	1
42	Trichosterigma benedictum	3
43	Benthamia japonica	5
44	Dircaea magnifica	7
45	Buddleia Davidi	9
46	Gongora truncata alba	11
47	Werckleocereus glaber	13
48	Dudleya Brandegei	15
49	Abelia grandiflora	17
50	Peperomia obtusifolia	19

Part 2

JUNE 30, 1917

51	Solidago juncea	21
52	Echeveria multicaulis	23
53	Catasetum viridiflavum	25
54	Sagittaria latifolia	27
55	Baccharis halimifolia	29
56	Xanthisma texanum	31
57	Sedum Bourgaei	33
58	Cimicifuga simplex	35
59	Feijoa Sellowiana	37
60	Aster amethystinus	39

Part 3

SEPTEMBER 29, 1917

61	Harrisia gracilis	41
62	Epidendrum oblongatum	43
63	Aesculus parviflora	45
64	Micrampelis lobata	47
65	Bomarea edulis	49
66	Aster tataricus	51
67	Pachyphytum bracteosum	53
68	Harrisia Martini	55
69	Oncidium pubes	57
70	Raphiolepis ovata	59

Part 4

DECEMBER 31, 1917

PLATE		PAGE
71	Rosa "Silver Moon"	61
72	Dendrobium atroviolaceum	63
73	Centradenia floribunda	65
74	Piaropus azureus	67
75	Solidago altissima	69
76	Pentapterygium serpens	71
77	Freylinia lanceolata	73
78	Anneslia Tweediei	75
79	Crassula quadrifida	77
80	Aster cordifolius	79
	Index	81

NOLINA TEXANA

(Plate 41)

NOLINA TEXANA

Devil's-shoestring

Native of southern and western Texas

Family DRACAENACEAE — YUCCA Family

Nolina texana S. Wats. Proc. Am. Acad. **14**: 248. 1879.
Beaucarnea texana Baker, Jour. Linn. Soc. **18**: 236. 1880.

A plant with a stout rootstock and a short caudex on which many leaves are crowded. The leaves are greatly elongate, bright-green and shining, and in the wild state lie procumbent on the ground, thus forming a mat about the plant; their dilated bases are two inches long or less and closely imbricate, the outer ones thick, yellowish, and abruptly narrowed into the blade, while the inner ones are thin-margined and gradually narrowed. The leaf-blades are often a yard long and taper from about one fifth of an inch wide at the base to a very slender tip; they are striate on both sides, half-round below and triquetrous toward the apex; the edges are usually decidedly roughened. The flowering stem arises from the caudex and is surrounded at the base by the cluster of leaves. During the flowering period it is much shorter than the leaves and even in fruit when it lengthens it rarely exceeds them. The peduncle is very short and the internodes of the flowering stem are only about an inch long. The bracts subtending the branches or lateral panicles of the inflorescence have broad scarious-margined bases and slender elongate tips which exceed the branches, at least at flowering time. The lateral panicles are very dense at first, but they become more open and lax as the fruit begins to mature. The flowers are borne on short slender stalks which are angled and enlarged under the flower. The subtending bractlets, as also the buds and the panicle-axis, are white and often tinged with pink. The three sepals are white or greenish-white, ovate or elliptic-ovate and about one fifth of an inch long. The three petals are elliptic, narrower than the sepals and often pink-tinged within, but otherwise similar. The stamens are shorter than the sepals and petals; the white filaments are subulate, and the ovate and bright-yellow anthers are shorter than the filaments. The ovary is ovoid, white or greenish-white, and is tipped with three short-subulate styles. The capsule is depressed, and usually about one sixth of an inch long.

This plant was first collected on the Cibolo River, a tributary of the San Antonio River, in May, 1846, by Ferdinand Lindheimer. For a period of over thirty years it was referred to species to which it was not closely related, and not until 1879 did it find a place in

the genus to which it really belonged. Notwithstanding the apparent abundance of the plant in its natural range, it has been collected but relatively few times.

The specimen from which the accompanying plate was made was collected by D. T. MacDougal near Austin, Texas, in 1902. The plant flowered in the conservatories of the New York Botanical Garden in February, 1905.

This plant is known, locally, as "bunch-grass," and also as "bear-grass." The latter name, however, is mostly associated with a related plant of the same region, a species of *Dasylirion*.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Habit sketch of a young plant. Fig. 2.—Young plant, showing inflorescence in more detail. Fig. 3.—Bud, × 3. Fig. 4.—Flower, × 3. Fig. 5.—Pistil, × 3.

TRICHOSTERIGMA BENEDICTUM

(Plate 42)

TRICHOSTERIGMA BENEDICTUM

Saint Benedict Spurge

Native of San Benito Islands, Lower California

Family EUPHORBIACEAE — SPURGE Family

Euphorbia benedicta Greene, Pittonia **1**: 263. 1889.
Trichosterigma benedictum Millsp.

A low shrub a foot or more high, with abundant milky juice. The main stem rises from a deep, fusiform root, and is short and stout, an inch or two thick, separating into a few knotted, ascending branches; the whole covered with a close, smooth, shining bark. The leaves, mostly clustered on the short branchlets, are an inch or two long including their petioles; the blades are broadly obcordate or at times but slightly notched at the broad apex, up to about an inch wide, entire, light green and appearing glabrous though really slightly puberulent under a lens. The "flowers" are produced singly or in groups of two or three from the axils of the terminal leaves; they are borne on slender peduncles up to an inch long; the flower-like involucres are composed of broad and showy, cream-white, petal-like lobes which are obovate, slightly notched at the apex and bear each a more or less kidney-shaped, greenish yellow gland at the base. The true flowers are represented by a number of stamens, with short filaments, surrounded by fascicles of strap-shaped bractlets and a single central pistil which soon protrudes far beyond the involucral cup and bends gracefully downward with the ripening of the fruit; the three styles are connected at the base, each divided into two branches above the middle and each branch bearing a strongly recurved stigma. The fruit is smooth, proportionally large, 3-carpelled, the carpels glabrous and strongly keeled. The seeds are ovoid-globose, blue-gray, deeply and irregularly angularly pitted (almost honeycombed) and have a broad, distinct, deep brown ventral line.

This interesting shrub, very attractive in cultivation, grows only upon the islands of the Saint Benedict group, four miles in extent, lying some twenty miles seaward from the northern end of Cedros Island off the coast of Lower California. The plant was first brought to notice by Lieutenant Charles T. Pond of the U. S. S. Ranger, in 1889. The shrub abounds in milky juice which flows instantly from the slightest wound of any part of the plant The stems are very spongy and soft, scarcely woody; the root is soft and farinaceous with a tender, palatable interior devoid of the milky

juice. Plants may be readily grown, under proper temperature conditions, from cuttings; these, as the juice seals the wounds and prevents drying out, will remain alive for a considerable period.

The genus *Trichosterigma* of Klotzsch & Garcke (Abh. Akad. Wiss. Berlin **1859**[1]: 41; misquoted by Boissier as *Tricherostigma* in DC. Prodr. **15**[2]: 68) is based upon Karwinsky's *Euphorbia fulgens* as its type. It is characterized as follows:

> Shrubs. Stems not articulate; leaves alternate or fasciculate, entire, exstipulate. Inflorescence axillary, solitary or cymose; involucres broadly campanulate, limb large, 5-lobed, dentate, patent, contorted in the bud. Bracteoles of the male flowers linear-subulate, ciliate above, naked below; styles connate below; seeds ovoid-globose, strongly pitted, ecarunculate, marked with a dark, broad ventral line.

The species are all from the xerophytic regions of Southern California, Mexico, and Central America; they are, in addition to the above, *Trichosterigma fulgens*, *T. californicum*, *T. Hindsianum*, and *T. miserum*.

C. F. MILLSPAUGH.

M. E. Eaton

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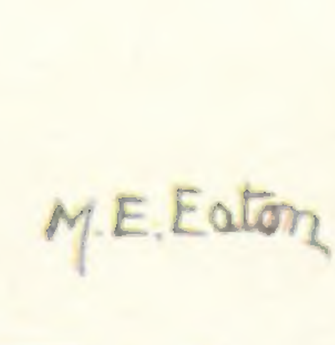

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1

BENTHAMIA JAPONICA

BENTHAMIA JAPONICA

Japanese Flowering Dogwood

Native of Japan and China

Family CORNACEAE — DOGWOOD Family

Benthamia japonica Sieb. & Zucc. Fl. Jap. 1: 38. *pl. 16.* 1837.
Cornus Kousa Buerger; (Miq. Ann. Mus. Bot. Lugd. 2: 159, as synonym. 1865) Franch. & Sav. Enum. Pl. Jap. 1: 196. 1875.
Cornus japonica Koehne, Deutsche Dendr. 438. 1893. Not *Cornus japonica* Thunb. 1788.
Benthamia Kousa Nakai, Bot. Mag. Tokyo 23: 41. 1909.

A shrub or small tree with spreading branches, sometimes attaining a height of twenty feet. The leaves, which are opposite and on very short stalks, are oval to elliptic-ovate, wedge-shaped or rounded at the base, sharp-pointed at the apex, two to four inches long and one and a half to two inches wide. They are appressed-pubescent on both surfaces, especially the lower, dark green above and paler beneath; the nerves are curved, their upper axils on the lower surface usually with brown hairs. The flowers, which appear after the leaves, are in heads, one quarter to three eighths of an inch in diameter, subtended by usually four spreading, ovate, sharp-pointed, cream-white bracts up to one and a half inches long and three quarters of an inch broad. The flowers are greenish, about three sixteenths of an inch in diameter; the calyx-tube is short, the sepals obscure or wanting; the four spreading petals are oblong, rounded at the apex, and a little more than one eighth of an inch long. The stamens are of the same number as the petals and alternate with them. The style is short and rather stout. The berries are united, forming a red fleshy globular fruit.

Of all the trees which adorn our woodlands in the spring, none exceeds in beauty and attractiveness the flowering dogwood, *Cynoxylon floridum.* Its mantle of white makes of it a striking feature, when many other trees are in their uniform of green. The flowering dogwood of Japan is equally striking, though perhaps not of so great stature, and must be one of the most admired of all the trees and shrubs of the wooded mountains of Japan, where it grows usually at elevations between 2000 and 4000 feet. Unlike our flowering dogwood, its blossoms appear after the leaves, the contrast of the white starry blossoms with the dark green of the foliage at once arresting the attention. In the fruticetum collection

of the New York Botanical Garden there are a number of the Japanese flowering dogwoods. It was from one of these, obtained in 1904, that the illustration here presented was prepared.

There are two woody genera of the dogwood family with involucres of large showy bracts, *Benthamia*, three species, of Asiatic distribution, and *Cynoxylon*, two species, of the United States.

Benthamia is nearly related to *Cynoxylon*, but differs in the appearance of the flowers after the leaves and in the fleshy fruit, made up of many united berries; in *Cynoxylon* the berries are separate. Of the three species of *Benthamia*, one, *Benthamia capitata*, is found in the Himalayan region, another is known only from Hongkong, and the third is the one here illustrated. Of these only the last is hardy in this latitude and as far north as Massachusetts. It should be more generally cultivated than it now is. In the collections of the New York Botanical Garden it has flowered annually, the first time in June, 1913.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Head of flowers, longitudinal section. Fig. 3.—Flower, × 4.

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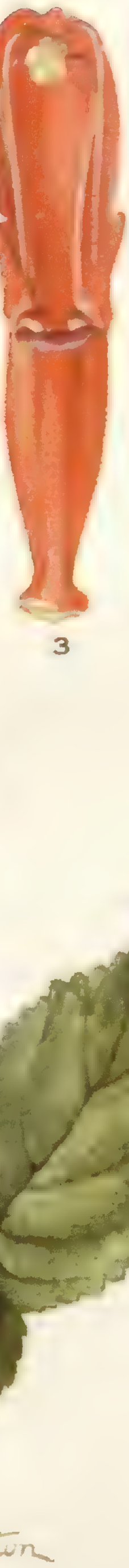

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M.E Eaton

DIRCAEA MAGNIFICA

DIRCAEA MAGNIFICA

Magnificent Gesneria

Native of Brazil

Family GESNERIACEAE — GESNERIA Family

Gesneria magnifica Otto & Dietr. Allg. Gartenz. 1: 265. 1833.
Gesneria bulbosa Hook. Bot. Mag. *pl. 3886.* 1842.
Dircaea magnifica Decaisne, Rev. Hort. III. 2: 466. 1848.

A perennial herb, finely puberulent throughout, with a simple leafy stem a foot or more in height, growing from a globoid or oval slightly annulate tuber, and bearing its flowers two to seven together in simple short-peduncled axillary cymes which in well-developed plants form together a loose interrupted thyrse. The stem is mostly stout but weak, its internodes less than half the length of the leaves, which are opposite, those of each pair being subequal, and short-petioled; the blades are two to five inches long and a half to two thirds as broad, ovate, acutish, cordate, irregularly dentate, with both teeth and sinuses either acutish or obtusish, the margins densely and shortly ciliate with white hairs, thin, green and grayish-hairy on both surfaces, veiny, the veins slender, reddish, the secondaries alternate or subopposite, the branches somewhat anastomosing. The peduncles are subtended by reduced sessile or clasping leaves, the upper by mere bracts. The pedicels are mostly longer than the peduncles, but scarcely equaling the flowers, slender, slightly recurved. The calyx-tube is twice as broad as long, or broader, the five subequal teeth incurved over the gibbosity of the corolla, lance-linear, four or five times as long as broad, acute. The scarlet corolla is pubescent, two to two and a half inches long and with an extreme breadth of an inch when flattened out, lightly recurved; the tube is infundibular, with a basal swelling that is circular but greater posteriorly, and an abrupt short constriction, gradually expanding upward into the tube proper, which comprises half the total length; the lower lip is three-lobed, the lobes very short and broad, the anterior depressed, purplish on the inner surface, the lateral subauriculate, mostly reflexed in age; the upper lip, comprising a third of the corolla-length, is subauriculate at the base, broadening upward, nearly straight, the summit rounded and slightly notched. The stamens are adnate to the base of the corolla, only a slight vestige of the fifth being present; the pubescent filaments almost equal the corolla, and are incurved at the tip, the anthers forming an eight-rayed circular body under the hooded summit of the upper lip. The pistil is hairy, the ovary conic, the style equaling or slightly exceeding the upper lip, and the stigma capitate, two-

lobed, the lobes not or very little spreading. The disk is represented by only two posterior lobes; these are coherent or slightly separated, ovate or oval, with an entire or slightly notched summit.

This species occurs in the mountainous or hilly country of tropical Brazil, and has been introduced to cultivation, where it exhibits considerable variation, especially as to its hairiness. The specimen here figured was grown at the New York Botanical Garden from tubers collected in the Organ mountains of Brazil by J. N. Rose in 1915.

The genus *Gesneria,* with which this species has commonly been associated, and with which it agrees in habit, contains half a hundred species, distributed from the mountains of Brazil westward into the Andes and northward through Colombia into the West Indies. They favor shaded locations in rich woodland soil and amidst decaying vegetation. In the Andes they usually occur among begonias, oxalis, and terrestrial orchids, as well as with other gesneriads. They usually occur in colonies and, with their handsome scarlet flowers, form showy small patches against the forest hillside.

From *Gesneria* Decaisne separated the genus *Dircaea* chiefly on the basis of its long upper lip, which conspicuously distinguishes it from the true gesnerias. With this view the present writer feels constrained to agree.

H. H. RUSBY.

EXPLANATION OF PLATE. Fig. 1.—Plant, much reduced. Fig. 2.—Flowering stem. Fig. 3.—Flower, front view. Fig. 4.—Stamens. Fig. 5.—Pistil. Fig. 6. —Ovary, showing disk, × 2.

BUDDLEIA DAVIDI

BUDDLEIA DAVIDI

Summer Lilac

Native of China

Family LOGANIACEAE — LOGANIA Family

Buddleia Davidi Franch. Nouv. Arch. Mus. Paris, II. 10: 65. 1888.
Buddleia variabilis Hemsl. Jour. Linn. Soc. 26: 120. 1889.

A shrub, four to eight feet high, nearly horizontally branched, the branches terminating in drooping panicles. The stems are glabrous below and pubescent above, becoming somewhat tawny-gray tomentose in the inflorescence. The opposite leaves are green and nearly glabrous above, and clothed with a grayish-white tomentum on the under surfaces. They are two to six inches long, ovate-lanceolate or lanceolate, acute or acuminate, and have toothed margins. Clasping the stem between the leaf-bases are two roundish stipules. Many clusters of several flowers on short tomentose pedicels make up the curving panicles, which are three to seven inches long. The small pubescent calyx has four acute lobes. The corolla is one half to three quarters of an inch long, the tube cylindric, the four spreading lobes rounded. The four short stamens are attached slightly above the middle of the corolla tube. The short style is tipped with an ovate stigma. The two-celled capsule is less than an inch long.

The summer lilac, or butterfly bush, is one of the shrubs requiring some protection if cultivated very far north, but in our climate is practically hardy. Although killed back to the ground during a severe winter, it recovers strongly the next spring, and sends up new shoots which flower the same season. Plants in the New York Botanical Garden hold the green wood until the first of February of an average winter. Its wide-branching habit, the grace of its panicles of lilac flowers with deep yellow eyes, its delicate fragrance, and the whiteness of the under side of its leaves, make it a very valuable shrub for late summer and early autumn. The varieties *Veitchiana* and *magnifica* are even more attractive.

The genus *Buddleia* is quite extensive from Texas throughout tropical America, and in China and Japan, but is represented in cultivation by only a few species. *B. Colvillei*, *B. officinalis* and *B. asiatica* are not hardy, but are grown under glass. The last is a white-flowered kind which is grown as a winter cut flower and is

particularly effective displayed in large vases. Our illustration of *B. Davidi* was made from a plant which has been in the fruticetum of the Garden since 1903. The plant is readily propagated by seeds, or by cuttings of the old or new wood.

This species was among the plants sent from the mountains of central China to the garden of the Paris Museum, in 1869, by Père Armand David, a Lazarist missionary, and was described with others of Père David's plants by Franchet in 1888. Previous to this latter year it had also been found by Dr. A. Henry, whose herbarium is preserved in the New York Botanical Garden. In this collection is a specimen collected by him in the province of Hupeh.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, × 2. Fig. 3.—Corolla opened, showing stamens, × 2.

GONGORA TRUNCATA ALBA

GONGORA TRUNCATA ALBA

White-lipped Truncate Gongora

Native of Mexico

Family ORCHIDACEAE — ORCHID Family

Gongora truncata alba Nash, var. nov.

An epiphytic orchid with erect leaves, and a pendulous raceme of odd-shaped flowers. The pseudobulbs are ovoid, up to three or four inches long, deeply furrowed, and usually two-leaved. The elliptic leaves, up to fifteen inches long and four inches wide, are gradually narrowed at both ends, at the base into a short petiole or stalk, at the apex into an acute point. They are glabrous on both surfaces, with three to five primary nerves. The raceme, of a dozen or more spreading flowers, is pendulous, up to a foot long and with a stalk of about the same length, which arises from the base of the pseudobulb. The flowers, about an inch and a quarter across, are on curved stalks, with the column and lip turned down. The sepals and petals are pale straw color, marked with reddish brown. The dorsal sepal is broadly oval, about one half inch long, with the obtuse apex recurved. The lateral sepals, somewhat reflexed, are about three quarters of an inch long, and, when spread out, oblong and a little over a half inch wide; the margins are strongly revolute and the apex truncate; they are attached by a broad base to the elongate foot of the column. The narrow acute petals, adnate to the base of the column on one side, are about one quarter of an inch long. The ivory white lip, about a half inch long and of odd and unusual shape, is attached to the end of the column foot and follows the curve of the column with which it forms a semicircle. It is laterally compressed, its sides erect and touching at the middle, free at the base and forming two blunt horns. At about the middle of the lip on each side is an obliquely transverse ridge ending in a slender curved horn; the apex is channeled, with a recurved tip. The curved column is about three quarters of an inch long, slender, somewhat dilated above, and with a short reflexed horn on each side; in color it is similar to the sepals and petals.

The plant from which the illustration was prepared was obtained in Mexico in 1903, flowering in the conservatories of the New York Botanical Garden for the first time the next year.

The genus *Gongora*, comprising about twenty-five species, is distributed from Mexico to Peru and Brazil, with one species in the island of Trinidad. It is of the tribe *Gongorinae*, to which also

belong the Holy-Ghost flower, *Peristeria elata*, and the genera *Coryanthes* and *Stanhopea*, both with odd-shaped and unusual flowers.

Gongoras are of easy culture, usually flowering quite freely. When growing vigorously they require considerable heat and plenty of water, but in the winter, when at rest, little water is needed, and they should be kept in a shaded cool moist house.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Plant, much reduced. Fig. 2.—Raceme. Fig. 3.—Lip, side view. Fig. 4.—Lip, view from above. Fig. 5.—Column, side view. Fig. 6.—Column, front view. Fig. 7.—Anther, top view, × 2. Fig. 8.—Anther, bottom view, × 2. Fig. 9.—Pollinia, × 2.

WERCKLEOCEREUS GLABER

WERCKLEOCEREUS GLABER

Glabrate Werckleocereus

Native of Guatemala

Family CACTACEAE — CACTUS Family

Cereus glaber Eichlam, Monatsschr. Kakteenk. 20: 150. 1910.
Werckleocereus glaber Britton & Rose.

An epiphytic cactus, usually clambering or climbing by aerial roots. The stems are pale green, slightly glaucous, slender, three-angled, the sides being about one inch broad. The small areoles are about an inch apart, each bearing a small cluster of spines. There are three or four spines in a cluster, very short, needle-like, but with bulbose bases. The flowers, which open only at night, are large, nearly four inches long and fully as broad. The outer perianth-segments are narrowly oblong, yellowish white, spreading or recurved. The pure white inner perianth-segments are oblanceolate, acute, and somewhat serrate. The stamens are long and slender. The long pale yellow style is weak and reclines on the lower part of the flower. The stigma-lobes are white. The ovary and tube of the flower bear clusters of yellow acicular spines.

The specimens were obtained in 1911 through Dr. Rose from wild plants collected in Guatemala by F. Eichlam, and flowered in the New York Botanical Garden May 4, 1915.

This species was first described as a *Cereus*, but in its habit, flowers and fruit it is very unlike the true species of *Cereus*, of which the well-known greenhouse species, *Cereus Jamacaru*, is a good representative.

Werckleocereus glaber is a near relative of *W. Tonduzii*, which in 1909 Britton and Rose made the type of a new genus. This latter, a Costa Rican plant, has also previously been known as a species of *Cereus*.

Werckleocereus in its habit and stems resembles *Hylocereus*, but possesses very different flowers and fruits. In *Hylocereus* the ovary and fruit is covered with large foliaceous scales without spines or bristles in their axils. *Weberocereus* is another related genus bearing similar scales on the ovary, but only hairs are found in the axils; then, too, the ovary is not tuberculate and the fruit is not spiny.

J. N. ROSE.

PLATE 48

ADDISONIA

DUDLEYA BRANDEGEI

(Plate 48)

DUDLEYA BRANDEGEI

Brandegee's Dudleya

Native of Lower California

Family CRASSULACEAE — ORPINE Family

Dudleya Brandegei Rose, Bull. N. Y. Bot. Gard. 3: 21. 1903.

The dense rosette is composed of twenty or more lanceolate, entire, acute leaves; these are light green, in age becoming bronzed, and are two to six inches long. The flowering stems are either erect or spreading, or even prostrate, slender, four to fifteen inches long, simple or with a few strict branches, each branch bearing a secund raceme. The stem-leaves are small and ovate. The lower pedicels are longer than the upper ones, one fourth to one half an inch long; the calyx is deeply cleft into green ovate sepals; the corolla is greenish yellow, parted, one half an inch or more long, with nearly erect lobes. The ten erect stamens are included. The five carpels are erect.

The specimen here figured was collected by J. N. Rose at San Bartolome Bay, Lower California, while cruising on the U. S. Fisheries Steamer Albatross in 1911, and flowered in the New York Botanical Garden February 18, 1915. This plant was found on the dry rocky cliff and had little indication of life. It was collected and remained out of the soil fully two months.

The genus *Dudleya* contains about sixty species, all confined to the west coast of North America, extending from northern California to the southernmost point of Lower California. A few of the species extend inland, one or two being found in Arizona. They prefer, however, sandy shores and rocky cliffs, often coming directly under the influences of the ocean spray. Several species have long been in cultivation, but they are usually listed under the generic name *Echeveria* or *Cotyledon*.

J. N. ROSE.

EXPLANATION OF PLATE. Fig. 1.—Plant, reduced. Fig. 2.—Rosette. Fig. 3.—Branch of inflorescence. Fig. 4.—Corolla opened, exposing stamens.

PLATE 49

ADDISONIA

ABELIA GRANDIFLORA

(Plate 49)

ABELIA GRANDIFLORA

Hybrid Abelia

Of Hybrid Origin

Family CAPRIFOLIACEAE HONEYSUCKLE Family

Abelia rupestris grandiflora Rovelli; André, Rev. Hort. **1886**: 488. 1886.
Abelia rupestris Hort.; Spaeth, Gartenflora **41**: 113. 1892. Not *Abelia rupestris* Lindl. 1846.
Abelia grandiflora Rehder, Cycl. Am. Hort. **1**: 1. 1900.

A half-evergreen shrub up to four or five feet tall, with spreading recurved stems, the puberulent branches of the year with ruby bark, flat, widely divergent from the stem, and with the handsome foliage dark green, lustrous, turning a beautiful bronze in the fall and winter. The opposite leaves, on short stalks, are ovate to elliptic, rounded or wedge-shaped at the base and acute at the apex, up to an inch and a quarter long and five eighths of an inch wide. The upper surface is dark green, glabrous, the lower much paler with the nerves usually hairy, and the margin furnished with a few rather irregular teeth which are usually gland-tipped. The flowers are clustered in the axils of the upper leaves, forming a leafy inflorescence. The prominently veined sepals, about a quarter inch long, vary from two to five, radiate from the apex of the inferior pubescent ovary, are oblanceolate and acute or obtuse, and are of an old-rose color. The corolla is up to three fourths of an inch long, white flushed with rose, broadening upward, shortly pubescent without, long-hairy within, its five lobes short and rounded. The four stamens are about as long as the corolla and attached to its base. The style, which has a capitate stigma, is shorter than the stamens.

The graceful habit, handsome foliage, and daintily colored flowers make this one of the most desirable decorative shrubs. Its foliage, at first of a rather bright green, soon becomes darker, and finally, when the cold of fall arrives, turns to a beautiful bronzy hue which persists in this latitude as long as the leaves, usually well into the winter. When in flower, and it flowers continuously from June to November, it is one of the handsomest of shrubs, the old rose of the calyx and the flush on the corollas making a striking combination with the rich green of the shining leaves. In this latitude it is almost evergreen, and further south would perhaps prove to be one of the best of evergreen shrubs. It is essentially

hardy in the vicinity of New York, some of the smaller branches occasionally killing back.

Abelia grandiflora is of garden origin, a reputed hybrid between *Abelia chinensis* and *Abelia uniflora*, inheriting its evergreen tendencies from the latter parent. It is frequently offered for sale under the name of *Abelia rupestris* or *Abelia chinensis*, considered by many synonymous. Of easy culture, it prefers a well-drained soil and a sunny sheltered situation.

The genus *Abelia*, confined to the northern hemisphere, contains about twenty known species, distributed mainly in eastern and central Asia, with one in the Himalayas and two in Mexico. It is closely related to *Linnaea*, with which it is united by some botanists.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, opened.

PEPEROMIA OBTUSIFOLIA

(Plate 50)

PEPEROMIA OBTUSIFOLIA

Blunt-leaved Peperomia

Native of Tropical America

Family PIPERACEAE — PEPPER Family

Piper obtusifolia L. Sp. Pl. 30. 1753.
Peperomia obtusifolia A. Dietr. Sp. Pl. 1: 154. 1831.

A somewhat fleshy, bright green, smooth plant with rather stout, simple or branched, decumbent stems sometimes a foot long or longer, emitting slender roots from the nodes of the stem. The leaves are elliptic or obovate, firm in texture, from two to five inches long and from one to two inches wide; they are rounded or notched at the apex, narrowed at the base, and often decurrent on the petiole, which is sometimes one and one-half inches long; they are rather dark green and slightly shining on the upper surface, dull green on the under side; the midvein is rather prominent on the under surface, and the lateral veins are few and obscure. The very numerous and minute flowers are in slender spikes borne solitary or two together at the end of a stalk one inch to two inches long, the spikes being 5 inches long or less and only about two lines in thickness. The minute and imperfect flowers are slightly sunken in contiguous circular pits, each subtended by a minute bract; there are two stamens with short filaments; the ovary is sessile, with a terminal stigma. The fruits are minute, oblong berries, loosely attached to the spikes, rather less than half a line in length, and tipped with a slender, hooked beak about one quarter of a line long.

The plant inhabits wet forests nearly throughout continental tropical America and the West Indies, and occurs also in extreme southern Florida, growing on rocks, on old tree trunks, fallen logs, or on the ground, sometimes forming large colonies. It was first made known to botanists by Plumier in his "Description des Plantes de l'Amerique" 53, *plate 70*, published in 1693, under the name *Saururus humilis, folio carnoso, subrotundo;* he had it from the French Antilles, but does not say from which island; he records the French names "queuë de lezard" and "pourpier de bois" as applied to it; according to Father Duss in "Flore phanérogamique des Antilles francaises," it is known as "queue-de-lézard" in Martinique. It has been recorded from Bermuda, but the Bermuda

plant proves to be different and should be called *Peperomia septentrionalis* S. Brown.

The genus *Peperomia* consists of more than six hundred species, mostly inhabitants of tropical America, but some occur in the Old World. The plants grow readily and often luxuriantly in moist greenhouse cultivation and are readily propagated by cuttings. The nearest relative in the northern flora is the common Lizard's-tail of eastern North America, *Saururus cernuus* Linnaeus.

Our illustration was made from a plant collected in Porto Rico by N. L. Britton and J. F. Cowell in 1906, which has since frequently flowered at the New York Botanical Garden.

N. L. BRITTON.

EXPLANATION OF PLATE. Fig. 1.—Plant. Fig. 2.—Fruit, × 4.

PLATE 51

ADDISONIA

SOLIDAGO JUNCEA

(Plate 51)

SOLIDAGO JUNCEA

Early Goldenrod

Native of eastern United States and Canada

Family CARDUACEAE — THISTLE Family

Solidago juncea Ait. Hort. Kew. 3: 213. 1789.

A perennial herb, eighteen inches to five feet high, from creeping rootstocks. It is glabrous and smooth or nearly so throughout, except for scattered hairs on the branches of the panicle and on the leaf-margins. The stem is ridged and bears numerous alternate leaves from the base to the panicle. The lower leaves are oval, obovate or broadly oval-oblanceolate in shape, are serrate or serrulate on the margins, and gradually tapes into the petiole They are long-petioled and vary from six to twelve inches, or even more, in length and from one to two inches in width. Going up the stem the leaves gradually become smaller, narrower and more entire; all of the leaves are pinnately veined (not strongly triple-nerved) and vary from rather thin to firm in texture. The panicle is four to twelve inches long and when well developed has many widely spreading branches. The numerous heads are borne on the upper side of the branches, and each head is on a stalk of about its own height. The heads are campanulate and about a sixth of an inch high; the oblong bracts are rigid, acute or obtuse, and greenish yellow in color; each head has a number of flowers, and the seven to twelve marginal flowers have short yellow rays; the achenes are more or less pubescent.

In the vicinity of New York this earliest of our goldenrods commences to flower late in June. It is at its best in July and August, and is truly the forerunner of the hosts of goldenrods, asters and other composites which in late August and September give our meadows, woodlands and swamps such an amazing amount and variety of color. Neglected pastures and old abandoned fields in the uplands are its favorite places of abode, but it is not as critical as some plants are, and is to be found in abundance in almost any kind of dry, sunny location. However, it is not properly a plant of the coastal plain of New Jersey and is there wanting or very local.

Originally described by the English botanist Aiton from a small specimen collected by Solander near Hudson Bay, the range of this species is now reported to extend from New Brunswick south

to North Carolina and Tennessee and west to Missouri and Saskatchewan. There are a number of closely related species, especially in the southern parts of the United States, and it is probable that these have to some extent at least been confused with the present one.

The botanist who named this plant thought it bore a resemblance to some species of rush (*Juncus*), and so gave it the specific name it bears. One is left with a profound respect for the vividness of an imagination detecting any such resemblance.

As to the known properties and uses of this plant, like many others it gives beauty and harmony to our surroundings and contributes its own share to the splendors of our natural flower gardens.

KENNETH K. MACKENZIE.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Lower leaf. Fig. 3.—Flower-head, × 3.

ECHEVERIA MULTICAULIS

(Plate 52)

ECHEVERIA MULTICAULIS

Many-stemmed Echeveria

Native of Mexico

Family CRASSULACEÆ ORPINE Family

Echeveria multicaulis Rose, Contr. U. S. Nat. Herb. 8: 294. 1905.

The slender stems, which are erect and somewhat branched, are eight inches to three feet or more high, roughened below and smooth above. The sterile branches are crowned with a rosette of small obovate leaves; the elongate flowering branches bear scattered oblanceolate leaves. The leaves are one to two inches long, flattened, mucronate-tipped, glabrous. The equilateral raceme is of seven to twelve flowers, each subtended by a small bract. The pedicels are short, one quarter of an inch long or less. The calyx has five linear, acute, green lobes. The five-lobed corolla, angled and acute in the bud, is reddish without, yellowish within.

This species was introduced into cultivation by E. W. Nelson and E. A. Goldman, and was distributed by the United States National Museum in 1903. The plant grows freely in cultivation. This is one of the few species in this genus with the flowers in equilateral racemes. It is a native of the state of Guerrero, Mexico, and has repeatedly flowered at the New York Botanical Garden.

J. N. ROSE.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Flower, × 2.

PLATE 53

ADDISONIA

CATASETUM VIRIDIFLAVUM

(Plate 53)

CATASETUM VIRIDIFLAVUM

Green and Yellow Catasetum

Native of Central America

Family ORCHIDACEAE **ORCHID Family**

Catasetum viridiflavum Hook. Bot. Mag. *pl. 4017.* 1843.

An epiphytic orchid. The pseudobulbs are leafy, up to four or five inches long. The leaves are broadly oblanceolate, eight to ten inches long, three- to-five-nerved, recurved, the apex acute, gradually narrowed from above the middle to a long narrow petiole-like base. The inflorescence is simple, of three to six or more spreading flowers which are two inches or a little more in length. The yellowish green sepals are somewhat spreading, elliptic to ovate-lanceolate, an inch and a quarter to an inch and a half long, acute. The petals are broadly ovate or elliptic, about as long as the sepals and closely associated with the upper sepal. The lip is yellow shaded with green, conic-globose, with a broad rather obtuse point at one end; the opening in the lip terminated in a quadrangular orifice, the margins ciliate. The column is stout, somewhat curved, with a pronounced beak and two long basal appendages, one of which is curved forward, the other laterally.

This species was discovered by Barclay on the Pacific side of Central America, while engaged as government botanist on H. M. S. Sulphur. Living plants were sent to the Royal Botanic Gardens, at Kew, England, and flowered there during the summer of 1842. The plant from which the accompanying illustration was prepared formed part of a collection of Panama orchids purchased by the New York Botanical Garden in 1907. Living plants were also secured by Percy Wilson in Honduras in 1903.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Pseudobulb and leaves. Fig. 2.—Portion of inflorescence.

PLATE 54

ADDISONIA

SAGITTARIA LATIFOLIA

(Plate 54)

SAGITTARIA LATIFOLIA

Broad-leaved Arrow-head

Native of continental North America

Family ALISMACEAE WATER-PLANTAIN Family

Sagittaria sagittifolia L. Sp. Pl. 993, in part. 1753.
Sagittaria latifolia Willd. Sp. Pl. 4: 409. 1806.
Sagittaria variabilis Engelm. in A. Gray, Man. 461. 1848.
Sagittaria sagittifolia variabilis Micheli, in DC. Monog. Phan. 3: 69. 1881.

A perennial marsh or aquatic herb, very variable in size, with glabrous foliage. The stems (rootstocks) are underground, with more or less elongate branches that often bear tubers. The leaves are erect or nearly so, commonly one to three feet tall; the petioles taper gradually upward from the stout partly sheathing bases which are imbricated about the base of the flowering stem; the blade of the leaf is of a hastate or sagittate type, but exceedingly variable in shape and size, ranging from four to sixteen inches in length; the terminal lobe varies from deltoid or ovate to linear, and the basal lobes are of about the same shape as the terminal one, but relatively narrower or sometimes much narrower and usually nearly or quite as long, acute or acuminate. The scape or flowering stem is erect and is usually taller than the leaves; it is simple, and bears above the middle few or several whorls of three flowers each. The flowers of the lower whorls are usually pistillate, those of the upper are staminate; the pedicels of the pistillate flowers are three quarters of an inch to two inches long or sometimes shorter, and each one is subtended by an ovate bract which is commonly less than one third of an inch in length. The green sepals are ovate, oval, or obovate, one quarter to one half an inch long, obtuse, concave. The white petals are suborbicular or cuneate-orbicular, three quarters of an inch to one inch long, very delicate, the margins often undulate or crisped. The stamens are usually numerous, with pale, filiform or subulate, filaments and ovoid or oval yellow anthers which are one twelfth of an inch or less in length. The pistils are very numerous, closely set together on a spheroid, often much depressed, receptacle. The fruiting heads are depressed-globose, mostly two thirds of an inch to one inch in diameter or rarely larger. The achenes are about an eighth of an inch long; the body is obovate or cuneate, but inequilateral, broadly winged, especially at the top; the horizontal beak has a slightly declined or curved tip.

This arrow-head has a very wide geographic distribution, ranging from New Brunswick and Nova Scotia to British Columbia, southward to Florida and California, and through Mexico to Central

America. The plants grow partly submersed in water, on moist or muddy shores, or on sandy flats.

Although varying greatly in size, the most conspicuous variation is in the leaf-blades. These range from very inconspicuous organs with narrowly linear lobes to conspicuous objects with deltoid lobes, the whole blade sometimes assuming a deltoid-reniform outline. Plants with these large leaves often take complete possession of swamps, covering extensive areas with their leaves, overtopped during the flowering season by the panicles of white flowers.

For many years our plant was confused with one of similar habit native in Europe. In the first decade of the last century the American plant was definitely separated from the other. Then for about a century this plant was renamed many times, chiefly on account of the great variability in the form of the leaf-blades. This type of variability is very common in many aquatic plants, and it is now understood that these various forms represent only a single species.

The starchy tubers of the arrow-head were formerly extensively used by the North American Indians for food. The plant has been exterminated in many places, both by the advance of civilization and by the introduction into ponds, lakes, and streams of certain fish that live largely on the young plants of this and other aquatics.

JOHN K. SMALL.

EXPLANATION OF PLATE. Fig. 1.—Part of a leaf, showing upper portion of the petiole and the blade. Fig. 2.—Inflorescence. Fig. 3.—A whorl of fruit-heads. Fig. 4.—An achene, × 5.

BACCHARIS HALIMIFOLIA

(Plate 55)

BACCHARIS HALIMIFOLIA

Pencil Bush

Native of the eastern United States and the West Indies

Family CARDUACEAE — THISTLE Family

Baccharis halimifolia L. Sp. Pl. 860. 1753.

A dioecious, erectly branched, maritime shrub up to ten feet high, having a slightly resinous character, the branches angled, at least the younger parts minutely scurfy. The leaves are numerous, alternate, dull pale green in color, smooth and of a thickness that gives them a firm quality; they are one to three inches long, one to two inches wide, obovate-cuneate, irregularly angular-dentate above and short-petioled or, on the upper branches, narrower as well as sessile and entire. The heads are small and many-flowered, those of the staminate plant somewhat globose and mostly clustered at the ends of leafy branchlets, those of the pistillate plant more oblong and loosely paniculate; the scales of the involucre are imbricate and glutinous. The flowers are yellowish white and tubular, those of the pistillate plant filiform. The pappus is white, capillary, and in the fruiting plant copious and elongated.

Although this maritime shrub thrives under cultivation in inland gardens, its natural home is the salt marsh and along creeks and rivers that receive the tides. Only infrequently does it stray beyond saline influences. Its range is the long strip of seaboard from Massachusetts to Florida and along the Gulf to Texas, and it occurs also in Cuba and the Bahama Islands. A closely related species is found in Bermuda as well as near the coast in our southern states, and many others belong to the west and southwest and the Pacific states, some of them inhabiting arid regions, others the richer soils of water courses and even of mountain woodlands. The genus, which is a large one, embracing some three hundred species, reaches its highest development in South America. Some of the species are herbs, and others are herbaceous from a woody base. The pencil bush is less woody above than many of our strong undershrubs of swamp and woodland, its upper parts and inflorescence being soft and pliant. It is thus a strongly individualized form in our vegetation and of very characteristic appearance, especially in those situations where it groups itself in greatest abundance, for few other shrubs, or often none at all, are fitted to accept the saline conditions that are its choice. By this it is drawn

to the attention of those whose occupations are along the tidal rivers and bays, and in some districts it is familiarly known to the bay men as Marsh Elder, colloquialized to " Mash Elder."

The flowers are inconspicuous and do not attract notice, but at seedtime it becomes a thing of beauty. Its earlier sombre aspect is brightened then into a silvery whiteness, the crowded panicles upbearing myriads of lustrous silky tufts in size and form like an artist's delicate water-color pencil, whence the name pencil bush. At fuller maturity these tufts become more cottony and finally, with the released achenes, are wafted by the winds over the marshes. This is always very late in the season, for this shrub is one of our latest-flowering species.

EUGENE P. BICKNELL.

EXPLANATION OF PLATE. Fig. 1.—Fruiting branch. Fig. 2.—Staminate flowers. Fig. 3.—Pistillate flowers.

XANTHISMA TEXANUM

(Plate 56)

XANTHISMA TEXANUM

Texas Xanthisma

Native of Texas

Family CARDUACEAE — THISTLE Family

Xanthisma texanum DC. Prodr. **5**: 95. 1836.
Centauridium Drummondii Torrey & Gray, Fl. N. Am. **2**: 246. 1842.

An annual or biennial herb, one to two feet high, bearing solitary radiate heads of flowers, on spreading branches. The alternate leaves are oblong to linear-lanceolate, acute and slightly awn-tipped, about one inch long. The upper leaves are nearly entire, while the lower are somewhat pinnatifid-toothed. Around the compact disk of numerous fertile flowers are about twenty ray-flowers, also fertile, in a greenish involucre of two or three series of imbricate bracts which are acute, leathery at the base and herbaceous at the tip. The achenes are top-shaped, four- or five-ribbed, with a pappus of numerous fringed bristles of irregular length.

This plant was probably first collected in Texas about 1830, by Berlandier, and later by Drummond and by Riddell. It grows naturally in the prairies of Texas. It is sold by seedsmen as *Centauridium Drummondii*, a name given to it by Torrey and Gray, who described it from Drummond's specimens.

In gardens it is treated as a hardy annual, and flowers nearly all summer. Its flowers are of a pleasing golden yellow shade and, growing on long stems, are valuable for cutting. It is readily propagated by seeds.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Achene, × 3.

SEDUM BOURGAEI

(Plate 57)

SEDUM BOURGAEI

Bourgeau's Sedum

Native of Mexico

Family CRASSULACEAE ORPINE Family

Sedum Bourgaei Hemsl. Diag. Pl. Nov. 1: 11. 1878.

A shrubby much-branched plant two to ten inches high, the branches slender, reddish, and very leafy. The alternate leaves are narrow, terete, about a quarter of an inch long, and usually at right angles to the branches. The few subsessile flowers are arranged on one side of the terminal branches. The calyx-lobes are five, green, somewhat unequal, an eighth of an inch long or less. The petals are five, spreading, lanceolate, red to pale pink, obtuse to acute. The stamens are ten, and the carpels five, the latter at first erect.

This species is common in the valley of Mexico, and is sometimes cultivated by the Mexicans. It is rather inconspicuous, but has pretty flowers; it does not much resemble the ordinary species of Sedum usually seen in cultivation.

The illustration was made from a plant obtained by J. N. Rose in central Mexico in 1903. It has flowered repeatedly in the conservatories of the New York Botanical Garden.

J. N. ROSE.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Flower, × 2.

CIMICIFUGA SIMPLEX

(Plate 58)

CIMICIFUGA SIMPLEX

Kamchatkan Bugbane

Native of eastern Asia

Family RANUNCULACEAE Crowfoot Family

Actaea Cimicifuga simplex DC. Prodr. 1: 64. 1824.
Cimicifuga simplex Wormsk.; Turcz. Bull. Soc. Nat. Mose. 15[1]: 87. 1842.

A perennial herb, two to four feet high, with spreading compound leaves and racemes of white flowers on long slender stalks. The broad thin leaves are triternately divided, the leaflets ovate or rounded, somewhat three-parted and irregularly toothed, with prominent veins, the terminal ones larger and with a longer stalk. The leaves are from four inches to a foot across, and spread out to make a flat green table from which the long flower-stalks arise. These are somewhat pubescent near the top and slightly colored. There are from twenty-five to forty flowers to a raceme, each on a short pedicel. The deciduous, pink-tinged sepals are usually two in number, larger than the numerous white, notched petals. The numerous white stamens are more conspicuous than the other floral parts, and in the center of the flower are two or three carpels which mature to form nearly glabrous, many-seeded follicles on long stipes.

Cimicifuga simplex was probably first found between 1830 and 1835. It is native of Japan, China, Dahuria and other parts of eastern Asia. There are specimens in the herbarium of the New York Botanical Garden collected by Maximowicz in Japan in 1862, and by Augustine Henry in China.

This plant has been cultivated for some time, often as *Pityrosperma acerinum*, *Cimicifuga acerina*, or *C. japonica*, but it is not that species. It is a strong-growing perennial, thriving in full sun or partial shade. The foliage is attractive during the summer, and the graceful spikes of flowers come in September and October. It is propagated by division of the root in fall or spring.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Leaf. Fig. 2.—Inflorescence. Fig. 3.—Flower, × 2.

FEIJOA SELLOWIANA

(Plate 59)

FEIJOA SELLOWIANA

Pineapple Guava

Native of central South America

Family MYRTACEAE — MYRTLE Family

Orthostemon Sellowianus Berg, in Mart. Fl. Bras. **14**[1]: 467. 1857.
Feijoa Sellowiana Berg, in Mart. Fl. Bras. **14**[1]: 615. 1859.

A small tree up to twenty feet tall, with the young branches and lower surface of the leaves covered with a dense white tomentum. The leaves are opposite and on petioles one quarter inch long or less; the blades are elliptic, obtuse at both ends or somewhat acutish at the base, up to three inches long and one and a half inches wide, with commonly seven to nine somewhat ascending nerves on each side, the upper surface glabrous. The showy axillary or lateral flowers, which are on pubescent peduncles up to three quarters of an inch long, are sometimes two inches across, a combination of white, red, and yellow. The sepals and the hypanthium, or calyx-tube, are densely white tomentose; the four sepals are ovate, obtuse, and spreading or reflexed at the time of flowering. There are four obovate and ciliate petals which are up to three fourths of an inch long and a half inch broad. The numerous stamens, with red filaments and yellow anthers, are about as long as the petals. The style is about as long as the stamens, and has a capitate stigma. The ovary is four-celled, each cell with numerous ovules The fruit is ellipsoid, green, up to two inches long and nearly as broad. The seeds are reniform-orbicular, compressed.

The plant from which the illustration was prepared was obtained in 1902 by exchange with the Royal Botanic Gardens, Kew, England.

Feijoa is a small genus of a single, or perhaps two or three, species. It was at first given the name *Orthostemon*, but on account of the earlier application of this name to another group of plants the present name was substituted.

This species is indigenous to southern Brazil, western Paraguay, Uruguay and parts of Argentina. It is common in the forests of this region, and the fruit is highly esteemed by the natives, although not cultivated by them. About 1890 it was introduced into southern Europe, and it is now cultivated in the Riviera. It was brought to this country from France about 1900, and is becoming quite extensively cultivated in California, where it thrives. Its successful

cultivation seems to require a well-drained situation with a good loamy soil, rich in humus; it will not grow well in heavy clay or light sandy soils. The trees should be set fifteen to twenty feet apart.

When mature the fruits fall and must be set aside in a cool place for mellowing before they are suitable for eating; this state is reached when they become slightly softened and begin to exhale a characteristic fragrance.

The plant may be propagated by seeds, or by cuttings under glass. The cuttings should be about four inches long, of young wood taken from the ends of the branches, and should be placed in clear sand over bottom heat. They may also be propagated by layering.

The myrtle family, to which *Feijoa* belongs, contains about three thousand species, widely distributed in tropical regions, with few in subtropical, and only one, *Myrtus communis*, the common myrtle, in the Mediterranean region. There are two main centers of distribution, however, one in tropical America, and the other in Australia. The plants of tropical America usually have berry-like fruits, a good example of which is the guava, while those in Australia as a rule have dry fruits. The large Australian genus *Eucalyptus* belongs to this family.

GEORGE V. NASH.

ASTER AMETHYSTINUS

(Plate 60)

ASTER AMETHYSTINUS

Amethyst Aster

Native of the northeastern United States

Family CARDUACEAE Thistle Family

Aster amethystinus Nutt. Trans. Am. Phil. Soc. II. 7: 294. 1840.

A perennial herb, three to six feet high, with long, spreading branches. The stems are rough-hispid, bearing numerous slightly clasping leaves which are hispid on both surfaces, entire, linear-lanceolate and acute at the tip. They are one or two inches long and from one eighth to one fourth of an inch wide. The numerous flower-heads, less than an inch in diameter, are in large clusters. Each head is surrounded by a top-shaped involucre of many imbricate bracts, which are linear, hispid, and have spreading green tips. The amethyst ray-flowers, surrounding the small yellow disk, are twenty to thirty in number, and from one fourth to one half an inch long. The achenes have a copious pappus of brown bristles.

This aster is of local occurrence from Massachusetts to Iowa. It was probably first found, previous to 1840, in the neighborhood of Boston. According to Gray, it had been cultivated in England as *A. bostoniensis*, but in this country it has not been used as much as it should be. It has the habit of the well-known *Aster Novae-Angliae*, and is quite similar to *A. oblongifolius*, but its involucral bracts are hispid instead of glandular.

Our illustration was taken from a plant in a border group near Conservatory Range 1, New York Botanical Garden, which makes a display of amethyst-blue when the plants bloom in September and October. They are hardy, easily grown, and can be propagated by division.

KENNETH R. BOYNTON.

HARRISIA GRACILIS

(Plate 61)

HARRISIA GRACILIS

Jamaica Harrisia

Native of Jamaica

Family CACTACEAE — CACTUS Family

Cereus gracilis Mill. Gard. Dict. ed. 8. Cereus no. 8. 1768.
Cereus repandus Haw. Syn. Pl. Succ. 183. 1812. Not *Cereus repandus* Mill. 1768.
Cereus subrepandus Haw. Suppl. Pl. Succ. 78. 1819.
Harrisia gracilis Britton, Bull. Torrey Club 35: 563. 1909.

A dark green elongate cactus, sometimes twenty feet high, usually much branched, the branches rather slender, nearly erect, or much elongate and arching, about one and one half inches in diameter, with nine to eleven rounded ribs, the depressions between the ribs rather shallow, sinuate. The main trunk is either short or sometimes four or five feet high and two or three times as thick as the branches. The areoles, borne on the ribs, are small and one half inch to three quarters of an inch apart, bearing tufts of short white wool and ten to sixteen needle-shaped spines about one inch long or less, whitish, with black tips. The flower-buds, which are solitary at one or few of the areoles, are oblong-ovoid, short-pointed, covered with narrowly lanceolate scales, which subtend a few straight white hairs about half an inch long. The fully expanded flower is six inches to eight inches long, the narrowly cylindric straight tube a little longer than the limb; the tube is about one half inch in diameter and bears many narrowly lanceolate greenish-brown scales, which are closely appressed, acuminate, from half an inch to nearly an inch long, and subtend a few white hairs; the outer segments of the perianth are pale brown, narrowly linear, long-pointed, rather widely spreading, from two inches to three inches long and one sixth to one quarter of an inch wide; the inner perianth-segments are white, nearly oblong, about as long as the outer but two or three times as wide, and are rather abruptly slender-tipped. The many stamens are about one half as long as the perianth, and the style is about twice as long as the stamens; the stigma-branches are about one third of an inch long. The fruit is nearly globular or a little flattened, yellow, and two and a half inches to three inches in diameter, its base nearly flat and its top somewhat bluntly pointed; it is strongly tubercled when young, with low conic tubercles about one sixth of an inch high, each bearing a triangular lanceolate scale about a third of an inch long; in ripening, these tubercles become confluent and the scales fall away, the mature fruit being smooth or nearly so.

This cactus inhabits dry and usually rocky soil on the southern side of the island of Jamaica, mostly at low elevations near the coast, extending from somewhat east of Kingston to somewhat west of Great Pedro Bay, and is locally abundant. It is the type species of the genus *Harrisia*, described by me in 1909 in the Bulletin of the Torrey Botanical Club (35: 561). It is named in honor of William Harris, Government Botanist and Superintendent of Public Gardens of Jamaica, distinguished for his valuable contributions to the knowledge of the flora of that island, which have made its wild plants better known than those of any other of the Greater Antilles. The plant is locally called "dildo," a name applied also in the British West Indies to other columnar cacti.

About fifteen species of *Harrisia* are known, which are distributed from southern Florida and the Bahamas southward to Argentina, eight of them being West Indian or Floridian and seven South American.

The fruits of all the West Indian species are edible, containing a nearly white smooth pulp, and very numerous minute black seeds.

The plant from which our illustration was made was brought from Jamaica by John F. Cowell in 1904, and has since bloomed several times at the New York Botanical Garden.

N. L. BRITTON.

EPIDENDRUM OBLONGATUM

(Plate 62)

EPIDENDRUM OBLONGATUM

Short-leaved Cuban Epidendrum

Native of Cuba

Family ORCHIDACEÆ ORCHID Family

Epidendrum phoeniceum vanillosmum Lemaire, Fl. Serres *pl. 306.* 1848.
Epidendrum oblongatum A. Rich. in Sagra, Hist. Cuba **11**: 239. 1850.
Epidendrum brevifolium Jennings, Ann. Carnegie Mus. **11**: 102. 1917.

An epiphytic orchid, growing usually in small clumps. The pseudobulbs are ovoid, an inch to an inch and a half long, and bear one or two leaves at the apex. The thick leaves are oblong, up to six inches long and an inch wide, with the folded base clasping the base of the stem, and with the apex abruptly narrowed, usually into an obtuse shortly two-toothed summit. The flowering stem is usually under eighteen inches tall, though sometimes taller, with ovate straw-colored scattered scales below, and terminated by a raceme of three to a dozen flowers, which are from an inch and a quarter to an inch and a half in diameter. The brown sepals are narrowly elliptic, acute, about three fourths of an inch long, and the acute petals, in color similar to the sepals, are oblong-spatulate. The lip, which equals or somewhat exceeds the sepals and petals, is three quarters of an inch to an inch and an eighth long and is white, changing to yellow, veined with purple. The middle lobe is transversely oval, three quarters of an inch to an inch broad, two-lobed. The lateral lobes are vertical, projecting forward, and are obtuse at the apex. The crest is two-lobed. The column is about half an inch long. The capsule is one to one and a half inches long.

The plant from which the drawing was prepared was collected by Britton and Cowell along the Coloma Road, Pinar del Rio, Cuba, in the spring of 1911. It appears to be quite commonly distributed in Pinar del Rio and the Isle of Pines, and also occurs in the province of Havana.

This species is related to *Epidendrum phoeniceum* Lindl., but can be readily distinguished by the short leaves, and the lip which in that species is rose with a darker center. It may be grown in a house of ordinary tropical conditions.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Plant, pseudobulbs and leaves. Fig. 2.—Inflorescence. Fig. 3.—Lip, side view, × 1.5. Fig. 4.—Lip, spread out, × 1.5. Fig. 5.—Column, side view, × 1.5. Fig. 6.—Column, front view, × 1.5.

AESCULUS PARVIFLORA

(Plate 63)

AESCULUS PARVIFLORA

Small-flowered Buckeye

Native of South Carolina, Georgia, and Alabama

Family AESCULACEAE — BUCKEYE Family

Aesculus parviflora Walt. Fl. Car. 128. 1788.
Aesculus macrostachya Michx. Fl. Bor. Am. 220. 1803.

An erect, many-stemmed shrub, becoming ten feet tall, with ascending or upwardly curved branches and pale glabrous branchlets. The leaves are numerous and usually conceal the stems and branches. The petioles are about half a foot long, sometimes with scattered spreading hairs when young. The blades are pedately compound, with five, or exceptionally seven, leaflets at the slightly thickened apex of the petiole. The leaflets are dark-green and glabrous above, pale-green and pubescent with short hairs beneath; the blades of the three upper leaflets are obovate or elliptic-obovate, usually six to nine inches long, and rather long-petioluled; those of the lower pair of leaflets are much smaller than the others, obovate, elliptic, or ovate, and short-petioluled; all the leaflets are long-acuminate at the apex and finely and unevenly serrate. The flowers are borne in many, often numerous, erect, plume-like, narrow panicles, which terminate long peduncles that resemble the petioles. The pedicels are slender, about as long as the calyxes. The calyx is tubular-campanulate, about a quarter of an inch long, with obtuse unequal lobes. The petals are white, much exserted from the calyx, about three quarters of an inch long, spatulate, slightly unequal, with a midrib which divides into several veins in the broader part of the blade. The stamens are nearly twice as long as the petals or more, with thread-like filaments. The anthers are oval, reddish, about one twelfth of an inch long. The fruits are globose, an inch and a quarter to an inch and a half in diameter and smooth. The brown seeds are usually solitary in each fruit.

This buckeye was discovered, in what has proved to be about the extreme eastern limit of its geographical range, in the latter half of the nineteenth century. It was first named and described about the last decade (1788) of that century by Thomas Walter, a resident of South Carolina. In 1803 the plant was renamed as *Aesculus macrostachya* by André Michaux, who also collected it in the eastern part of its range. This name was in vogue in Europe for many years.

The plant has long been in cultivation, having been introduced into gardens in England as early as 1785, or three years before it was described and named, by John Fraser, who made extensive collections of living plants in the southeastern United States.

On the one hand, Walter was struck by the size of the flowers, which are smaller than those of the other species he knew, and named the plant accordingly; on the other hand Michaux's attention was attracted by the much longer and more conspicuous inflorescence than that in the species he knew, and consequently derived his specific name from that character.

This plant grows naturally in South Carolina, Georgia, and Alabama, chiefly in the region between the coastal plain and the mountains. It is widely cultivated both in North America and in Europe. It is naturalized in southeastern Pennsylvania.

This buckeye is a very desirable ornamental shrub from spring to fall. When not in flower its dense bank of dark-green leaves is attractive and when in flower its showy plumes of white flowers standing against and above the foliage are very conspicuous. The specimen from which the accompanying illustration was made was obtained in 1907 and has been in the fruticetum of the New York Botanical Garden, where it has flowered frequently.

It may be propagated from seeds, by side-grafting, budding, layering, or root-cuttings.

J. K. SMALL.

MICRAMPELIS LOBATA

(Plate 64)

MICRAMPELIS LOBATA

Wild Balsam Apple

Native of eastern North America

Family CUCURBITACEAE Gourd Family

Sicyos lobata Michx. Fl. Bor. Am. 2: 217. 1803.
Momordica echinata Muhl.; Willd. Sp. Pl. 4: 605. 1805.
Echinocystis lobata T. & G. Fl. N. Am. 1: 542. 1840.
Micrampelis lobata Greene, Pittonia 2: 128. 1890.

A rather tall climbing annual, with nearly smooth angular and grooved branching stems. The three-forked tendrils are often slender and conspicuously spirally twisted. The long-petioled leaves are three- to seven-lobed, deeply cordate at the base, thin and roughish on both sides. The acute or acuminate lobes are remotely denticulate. The flowers are small and of two kinds. The staminate flowers are very numerous, greenish-white and in narrow compound racemes which are often six to eight inches or more long; the five or six calyx-lobes are somewhat bristle-like; the corolla is deeply five-parted or six-parted into lanceolate acute lobes; there are three stamens; the anthers are more or less coherent. The pistillate flowers are solitary or sometimes two together from the same axils; the ovary is two-celled, with two ovules in each cavity. The fleshy, ovoid, bladdery fruit, which is about two inches long, is clothed with weak prickles and bursts at the summit; it becomes dry at maturity. The inner part of the fruit is fibrous-netted. The flat seeds, which are usually two in each cavity, are about three quarters of an inch long and five or six eighths of an inch broad with a thickish, hard and roughened, mottled coat.

The wild balsam apple grows naturally along river banks and in waste places from New Brunswick to Pennsylvania and Kentucky, westward to Saskatchewan and Texas. It is sometimes cultivated for arbors. At times the "mock apple," as it is sometimes called, may become very troublesome to the gardener, as its growth is rapid and its long climbing stems twine about everything within reach for support. However, being an annual it may be eradicated by removing the plants before the fruits mature.

This plant is quite common in thickets in the north meadow at the New York Botanical Garden, where the specimen which

furnished the accompanying illustration was collected on August 24, 1916.

P. WILSON.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Staminate flower, × 2. Fig. 3.—Stamens, × 4. Fig. 4.—Pistillate flower, × 2. Fig. 5.—Pistils, × 4. Fig. 6.—Fruit.

BOMAREA EDULIS

(Plate 65)

BOMAREA EDULIS

Edible Bomarea

Native of the West Indies

Family AMARYLLIDACEAE Amaryllis Family

Alstroemeria edulis Tussac, Fl. Ant. 1: 109. 1808.
Bomarea edulis Herb. Amaryllid. 111. 1837.

A tuber-bearing vine, usually climbing on bushes. The stem is up to twelve feet long, and is sometimes marked with purple. The leaves, which are on short petioles, rarely over one quarter of an inch long, are alternate, lanceolate to oblong-elliptic, narrowed or somewhat rounded at the base, acute at the apex; they are commonly from three to five inches long and three quarters of an inch to an inch and a half wide, although sometimes broader. The inflorescence is composed of three to a dozen branches up to six inches long, which form a terminal umbel, each branch bearing above the middle a two- or three-flowered somewhat leafy raceme. The flowers are bell-shaped, from an inch to an inch and a quarter long; the outer segments are obovate-elliptic, obtuse, the outside of a beautiful rose or salmon pink, the inside yellow with reddish veins; the inner segments, of the same length as the outer, are lanceolate or linear, acute, and yellow spotted with dark purple. The stamens are somewhat shorter than the perianth. The style is short, but little exceeding the ovary in length. The fruit is a capsule about an inch in diameter.

The plant from which this illustration was prepared was raised in the New York Botanical Garden from seed collected by the writer in a ravine, at an elevation of about 3,000 feet, near Marmelade, Haïti, in August, 1903; in 1905 he also collected it in the pinelands at the same place, at an elevation of about 2,500 feet.

This interesting plant is also found in Santo Domingo, where it is reported that the tubers are prized by the natives as food and as an article of commerce, in Cuba, and in the Isle of Pines. It has also been collected in Mexico, but whether there native or an introduction is not indicated.

The genus *Bomarea*, comprising over seventy-five species, is distributed from Mexico to Argentina, Chili and the West Indies,

the species here under consideration being the only one known from the last region.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Portion of the stem and leaves. Fig. 3.—Flower, outer segments removed. Fig. 4.—Ovary and style. Fig. 5.—Outer segment of perianth, inner surface.

ASTER TATARICUS

(Plate 66)

ASTER TATARICUS

Tatarian Aster

Native of Siberia, Japan, and China

Family CARDUACEAE Thistle Family

Aster tataricus L. f. Suppl. 373. 1781.

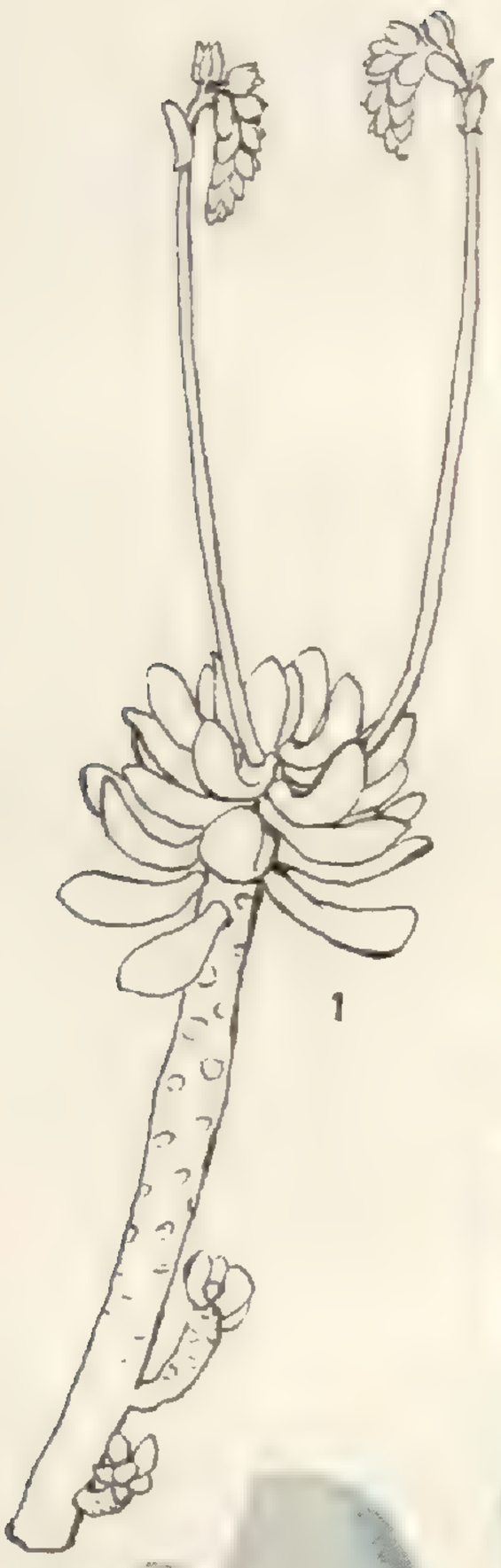
A perennial herb, up to seven feet high, with robust, leafy stems bearing corymbiform panicles of flowers. The roots are long and fibrous. The stems are erect, strongly grooved and hispid, becoming very rough in the inflorescence with spine-like hairs. The radical leaves are nearly two feet long and six inches wide, with margins of broad, somewhat mucronate teeth. They are lanceolate and narrowed at the base into slender petioles. The stem-leaves are sessile, tending to be decurrent, with a margin of sharp teeth. They are lanceolate, acuminate, about six inches long and one inch wide. Those on the branches of the inflorescence are still smaller, and very rough. The flower-heads are one inch or more across, surrounded by a campanulate involucre of herbaceous bracts, which are purplish at the tip and on the edges. The yellow disk is made up of perfect, tubular flowers, and is surrounded by fifteen to twenty pistillate ray-flowers, light-blue or purple in color, and three fourths of an inch long. The flattened achenes bear many simple bristles, and are borne upon a convex, pitted receptacle.

The Tatarian aster was first found in Siberia, and later in Japan and China. It grows in its native home on wooded hillsides. In the herbarium of the New York Botanical Garden are specimens collected in Japan by Maximowicz, and on Saghalien Island.

Our illustration was made from a plant growing in the flower beds near Conservatory Range No. 1, since 1911. This aster develops its strong stems during the summer, and flowers from late September, through October, until the hard frosts set in. Blooming as late as it does, it adds greatly to the beauty of the perennial border at a time when most of the flowers are gone. It has a tendency to spread by suckers, and is readily propagated by division. Its lasting flowers and long stems make it valuable for cutting.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Leaf. Fig. 3.—Involucre, × 2.



1

4

5

6

3

2

PACHYPHYTUM BRACTEOSUM

(Plate 67)

PACHYPHYTUM BRACTEOSUM

Large-bracted Pachyphytum

Native of Mexico

Family CRASSULACEÆ ORPINE Family

Pachyphytum bracteosum Klotzsch, Allg. Gartenz. **9**: 9. 1841.
Echeveria bracteosa Lindl. & Paxt. Fl. Gard. **3**: 60. *f. 261.* 1853.
Cotyledon Pachyphytum Baker, in Saund. Ref. Bot. **1**: under *pl. 59.* Cotyledon no. 12. 1869.
Echeveria Pachyphytum Morren, Belg. Hortic. **24**: 157, as synonym. 1874.

A leafy-stemmed, fleshy plant. The stems are up to a foot long, one to one and one half inches thick, and very leafy throughout. The leaves are thick, stiff, flattened, the lower ones standing at right angles to the stem, the upper ones erect or curved with ascending tips, purplish or bluish green, glaucous, oblanceolate, two inches or more long, acutish, terete at the base. The flowering stem is elongate, simple, eight inches to two feet long, naked below but leafy above, strongly curved at the apex, secund; the bracts are numerous, arranged in two imbricated rows, cordate at base; the pedicels are very short. The five sepals are unequal, and glaucous; the two outer and lateral ones are nearly equal, larger than the others, broadly oblong, obtuse, about a third of an inch long; the upper sepal and the two lower ones are much smaller. The corolla is about a fifth of an inch long, dark red, its five lobes spreading, and free nearly to the apex. Of the ten stamens the five alternating with the petals are free from the corolla, the other five borne on the petals, each with a pair of appendages at its base. The five carpels are free to the base, erect, each with a broad scale at its base.

This illustration is based on specimens obtained from Fairmount Park, Philadelphia, Pennsylvania, in 1900, which flowered in the New York Botanical Garden.

This is a well-known greenhouse plant, often passing as *Cotyledon Pachyphytum* or as *Echeveria Pachyphytum*, but is abundantly distinct from both *Cotyledon* and *Echeveria*. *Pachyphytum longifolium* has been already illustrated in this work at plate 4.

J. N. ROSE.

EXPLANATION OF PLATE. Fig. 1.—Habit sketch, plant about one fifth natural size. Fig. 2.—Apex of stem, with rosette of leaves. Fig. 3.—Apex of scape, with flowers. Fig. 4.—Flower, seen from above. Fig. 5.—Flower, sepals removed. Fig. 6.—Corolla, split open, exposing pistils and stamens.

PLATE 68

ADDISONIA

HARRISIA MARTINI

(Plate 68)

HARRISIA MARTINI

Martin's Harrisia

Native of Argentina and Paraguay

Family CACTACEAE — CACTUS Family

Cereus Martini Labour. Ann. Soc. Hort. Haute Garonne —. 1854.
Eriocereus Martini Riccob. Boll. Orto Bot. Palermo **8**: 241. 1909.
Harrisia Martini Britton, comb. nov.

A slender vine-like cactus, clambering over bushes, or nearly prostrate, often six feet long or longer, branched, the branches a little less than one inch thick, with four or five low ribs or angles, the depressions between the ribs shallow and narrow. The areoles, borne on the ribs, are small and circular, and usually bear a rather stout single spine about one inch long, brownish or straw-colored with a blackish tip, and several short radial spines, sometimes half as long as the central one, but usually shorter. The flowers appear singly at one or more of the areoles and are from five inches to about eight inches long; the nearly cylindric tube is about as long as the limb, or a little longer, and about one half an inch in thickness, bearing several short, broad, pointed, ovate scales, similar to those borne on the somewhat tubercled ovary and with brown felt in their axils; the widely spreading outer perianth-segments are nearly linear, long-pointed, greenish-brown, from two to three inches long and about one quarter of an inch wide, becoming pink when old; the inner perianth-segments are nearly as long as the outer ones but about three times as wide, and abruptly broad-tipped, white, or tinged with pink; the stamens are about two-thirds as long as the perianth-segments and the style about thes ame length, with a green stigma. The fruit is nearly globular, about one inch and a half in diameter, red, somewhat tubercled, bears a small ovate scale on each tubercle, and is usually spineless.

When first described in 1854, the habitat of this cactus was unknown, but it was subsequently found to grow in the deserts of Argentina and Paraguay; it is now common in collections of cacti and flowers frequently in greenhouses. The Italian botanist Ricco-bono recognized this plant and some of its relatives as a generic group distinct from *Cereus* and proposed for them the generic name *Eriocereus*, in 1909, the same year in which I proposed the generic name *Harrisia* (see plate 61 of this work); his account, published in the Bulletin of the Royal Botanical Garden of Palermo

appeared later in the year than my paper published in the Bulletin of the Torrey Botanical Club, the name *Harrisia* thus having priority.

I have been unable to verify the citation of the original publication of *Cereus Martini*, not having been able to learn of the existence of this, the first (and only?) volume of the Annales de la Société d'Horticulture de la Haute-Garonne, in the United States.

The plant, from which this illustration was prepared, was given in 1897 by F. S. Curtis to the New York Botanical Garden, where it has flowered repeatedly.

N. L. BRITTON.

ADDISONIA

ONCIDIUM PUBES

(Plate 69)

ONCIDIUM PUBES

Hairy Oncidium

Native of Brazil

Family ORCHIDACEÆ ORCHID Family

Oncidium pubes **Lindl. Bot. Reg. *pl. 1007*. 1826.**

An epiphytic orchid. The pseudobulbs are three to four inches long, bearing two leaves at the summit. The leaves are four to six inches long and about an inch broad, narrowed to a folded base and rather acute at the apex. The panicle is drooping and is borne upon a scape bearing a few white scales, both the scape and the branches and pedicels of the inflorescence being a dark red. The flowers are about three quarters of an inch in diameter. The petals and sepals ,which are greenish yellow on the outside and red-brown barred with yellow on the inside, are inwardly curved, giving the flowers a somewhat cup-shaped appearance; the lateral sepals are united almost to the apex, forming a narrow body which is two-toothed at the apex; the dorsal sepal is obovate, about a half inch long, rounded at the apex, and narrowed toward the base; the petals are similar in shape and size to the dorsal sepal but with a more narrowed base. The lip is red-brown; at the base is an orbicular transversely wrinkled callus with two ascending obtuse horns; in front of this and immediately above the lateral lobes is another callus of two blunt spreading processes; the lateral lobes of the lip project downward, are incurved, and with revolute margins; the middle lobe has the margin strongly revolute at the base and is provided with a thick transversely rugose callus, the apex of the lobe being broadly rounded and strongly reflexed. The pubescent column has on each side, about the middle, a thick and broad flat wing which spreads at a right angle to the column and is about as long as the column is wide. The anther is white with two pubescent processes.

The plant from which the drawing was made was collected by J. N. Rose at Corcovado, Rio de Janeiro, Brazil, in 1915, and flowered at the New York Botanical Garden. It is an odd member of the genus, the contrast of the outer with the inner side of the sepals and petals giving it a striking appearance. The lip is of queer and unusual shape. It requires a tropical house for its successful cultivation.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Pseudobulb and leaves. Fig. 2.—Inflorescence. Fig. 3.—Column and lip, × 2. Fig. 4.—Lip, from above, × 2. Fig. 5.—Dorsal sepal. Fig. 6.—Petal. Fig. 7.—Lateral united sepals. Fig. 8.—Anther, from above, × 4. Fig. 9.—Anther, side view, × 4.

RAPHIOLEPIS OVATA

(Plate 70)

RAPHIOLEPIS OVATA

Seacoast Raphiolepis

Native of southern Japan and Korea

Family POMACEAE — APPLE Family

Raphiolepis ovata Briot, Rev. Hort. **42–43**: 348. 1871.

An evergreen shrub or small tree up to twelve feet tall, with upright branches. The leaves, which are dark green and lustrous above and paler and dull beneath, are thick and leathery, and glabrous, except the young ones which are covered with rusty hairs when first emerging, the hairs however soon disappearing; the blades, on petioles three quarters of an inch long or less, are elliptic to obovate, obtuse or rounded at the apex, commonly cuneate at the base, up to three inches long and an inch and a half broad, the margin, which is usually revolute, more or less crenate-serrate above the middle. The white flowers, about three quarters of an inch in diameter, are in dense panicles, the axis and divisions of which are covered with rusty hairs. The calyx is clothed with brownish hairs, especially toward the base, the lobes being lanceolate and about an eighth of an inch long. The petals are about three eighths of an inch long, obovate. The fifteen to twenty stamens are shorter than the petals, the filaments flat and glabrous. The styles are about as long as the stamens. The fruit, black with a slight bloom, has a diameter of about one third of an inch, and contains usually a single nearly globular seed somewhat smaller than the fruit.

This plant, while not hardy in the north, is reported to stand about ten degrees of frost and is hardy in the southern states and in California. In the north it should be grown in a cool house, in a compost of sandy loam and leaf-mold. The plant from which this illustration was made was secured by the New York Botanical Garden in 1900, and has flowered and fruited repeatedly. Propagation is effected by means of seeds; by cuttings late in summer of ripened wood; and layering, and grafting on the thorn are sometimes resorted to.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower, longitudinal section. Fig. 3.—Fruiting branch. Fig. 4.—Seed.

ROSA "SILVER MOON"

(Plate 71)

ROSA "SILVER MOON"

"Silver Moon" Rose

Garden Hybrid

Family ROSACEAE — ROSE Family

A vigorous bush with long climbing stems, glossy dark green foliage, and large white partially double flowers. The stems attain a length of a dozen feet or more, and are armed with red spines which are compressed and somewhat recurved. The stipules are adnate to the leaf-rachis, have spreading acuminate free tips, and have the margins with stalked glands. The leaf-rachis, usually more or less tinged with red, bears a few spines, similar to those on the stem but smaller, and rather numerous stalked glands. The glabrous leaflets, which are commonly five, the lateral on stalks an eighth of an inch long or less, the terminal on a stalk much longer, are ovate to nearly orbicular, up to two inches long and an inch and three-quarters wide, and are abruptly short-acuminate; they are lustrous dark green above, paler beneath, the margins crenate-serrate with pointed teeth, usually fifteen to twenty-five on each side. The flowers are borne in clusters of usually two to four, the stalks, which are tinged with red, with stalked glands. The sepals are ovate, acuminate into a long tip, the margins entire or rarely toothed or lobed, the outer surface on the margins and the entire inner surface hairy. The buds are pointed and well-shaped, of a creamy yellow, opening into large flowers, sometimes five inches in diameter, of a pure white sometimes faintly tinged with yellow; the outer petals are broad and spreading, the inner smaller, undulate and incurved, partially concealing the central mass of bright yellow stamens, the whole producing a flower of charming beauty.

This rose was originated by Dr. W. Van Fleet, phsyiologist in the Bureau of Plant Industry, at Washington, D. C. In response to an inquiry Dr. Van Fleet writes as follows: "The climbing rose Silver Moon was raised in 1906 from an unnamed hybrid of *Rosa Wichuraiana* × *devoniensis* pollinated with the Cherokee rose (*R. laevigata*). I have grown many seedlings of *Wichuraiana* (type) × Cherokee, but none turned out as hardy and showy as Silver Moon. The influence of *devoniensis*, a large white-flowered and quite hardy form of *Rosa odorata* or Tea rose, appears to have been highly beneficial in the case of Silver Moon, though the direct cross of *Wichuraiana* and *devoniensis* has little merit as a garden plant, as it is a shy bloomer, but vigorous in growth and with good foliage." Dr. Van Fleet adds that Silver Moon bloomed the second year from seed.

It would appear from this that *Rosa devoniensis* has been the blending element, harmonizing in "Silver Moon" the best in *Rosa Wichuraiana* and *Rosa laevigata*, giving us in this production of Dr. Van Fleet a rose which holds a unique position among the climbing roses hardy in the north; for it adds to our gardens one with all the beauty and attractiveness of the Cherokee, not hardy in this latitude, combined with a vigor which defies the rigors of our northern climate. The large semi-double flowers and lustrous deep green foliage make it a striking object anywhere.

It was shown in 1908 at an exhibition of the Horticultural Society of New York held in the Museum building of the New York Botanical Garden. With the permission of the exhibitor the material exhibited was made into cuttings, and it is from this source that the plants at the New York Botanical Garden have been derived. The illustration was prepared from one of these plants.

GEORGE V. NASH.

DENDROBIUM ATROVIOLACEUM

(Plate 72)

DENDROBIUM ATROVIOLACEUM

Deep Purple-lipped Dendrobium

Native of New Guinea

Family ORCHIDACEAE — ORCHID Family

Dendrobium atroviolaceum Rolfe, Gard. Chron. **67**: 512. 1890.

This epiphytic orchid has furrowed pseudobulbs usually three to six inches long, rarely longer, and up to one half inch broad at the middle and tapering at the base; they bear at the apex two or three leaves which are oblong-elliptic, rather acute, and measure three to five inches long and an inch to two inches wide. From the apex of the pseudobulb arises a single spike of four to eight flowers, which are usually about two inches in diameter. The spreading sepals are yellowish white, marked, especially toward the base, with spots of violet-purple, the dorsal sepal an inch to an inch and a quarter long, ovate and obtuse, the lateral ones a little smaller, ovate-triangular and shortly acuminate, falcate, and forming a prominent chin at the base. The erect petals, similar to the sepals in color and size, are broadly oblong or obovate, acute, with the margins undulate toward the base. The greenish fleshy lip is about as long as the petals and is distinctly three-lobed; the erect lateral lobes, which partially enclose the column, are somewhat obovate, and are a deep violet-purple within and also partly without; the middle lobe is broader than long and longitudinally inrolled, marked within with violet-purple bands; the callus has three furrows below and two above. The column is nearly a half inch long, greenish-white, the front violet-purple, the apex with two sharp reflexed teeth.

This orchid, its coloration peculiar and unusual in the genus, is found in the warmest and deepest parts of the eastern portion of New Guinea, whence it was introduced into cultivation in England by Veitch & Sons in 1890. Its successful culture requires a hot humid house. The illustration was prepared from a plant which has been in the collections of the New York Botanical Garden for about ten years.

The genus *Dendrobium* is confined to the Old World, inhabiting the tropical regions of Asia and Australia, and the larger tropical islands of the Pacific, with a few species in Japan.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Pseudobulb. Fig. 2.—Flowering stem. Fig. 3.—Flower. Fig. 4.—Column, side view. × 2. Fig. 5.—Column, front view, × 2. Fig. 6.—Anther, × 4. Fig. 7.—Pollinia, × 6.

PLATE 73

ADDISONIA

CENTRADENIA FLORIBUNDA

(Plate 73)

CENTRADENIA FLORIBUNDA

Many-flowered Centradenia

Native of Mexico and Central America

Family MELASTOMACEAE MEADOW-BEAUTY Family

Centradenia floribunda Planch. Fl. Serres **5**: 453. 1849.

A branching shrub, two to three feet high, with pubescent, tortuous, deep red, obscurely four-angled branches. The leaves are opposite, numerous, with one leaf of each pair usually reduced in size; they have entire, ciliate margins, and are broadly lanceolate, acute, with their bases narrowed into short petioles. They are green above, with pubescence of scattered appressed hairs, dull, cinereous on the under surface, covered with stiff appressed hairs, and with three prominent veins. The inflorescence is in terminal, many-flowered cymes, the pubescent pedicels bearing delicate pink flowers about one half inch across. The glandular-pubescent hypanthium is broadly campanulate, somewhat four-sided, faintly eight-nerved, bearing upon its margin the sepals, petals, and stamens. There are four short, triangular sepals, alternating with the four petals. The petals are oval, obtuse, and obliquely placed. There are eight stamens, the filaments of which are short, and bear yellow, elliptic anthers; the four of these opposite the petals are smaller and darker colored than the other four. The ovary, enclosed by the hypanthium, is four-celled, many-ovuled, and surmounted by a short style and inconspicuous stigma. The capsule is glabrous, with four cells containing elliptic seeds.

This is one of the four or five species of the Mexican and Central American genus *Centradenia;* two others are often cultivated, *C. grandifolia*, with larger, colored leaves, and *C. inaequilateralis*, with smaller one-sided leaves. Planchon described our species in 1849 from a plant grown in the establishment of Louis Van Houtte, the famous Belgian horticulturist. In this species the reduction of the anther-appendages, which are so pronounced and curious in many plants of the Meadow-beauty family, is noticeable; the other cultivated species have prominent appendages.

Our illustration was prepared from a plant growing in the New York Botanical Garden greenhouses since 1902, coming originally from the National Botanic Garden at Washington. Although it lacks the richly colored foliage of *C. grandifolia*, its many flowers and red stems make it very attractive. It can be grown easily

in the greenhouse, is readily propagated by cuttings, and blooms nearly the whole year through.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Leaf, under side. Fig. 3.—Flower, opened, exterior view, × 2. Fig. 4.—Hypanthium and stamens. Fig. 5.—Pistil. Fig. 6.—Ovary, longitudinal section. Fig. 7.—Ovary, cross-section.

PLATE 74

ADDISONIA

PIAROPUS AZUREUS

(Plate 74)

PIAROPUS AZUREUS

Light-blue Water Hyacinth

Native of tropical America

Family PONTEDERIACEAE PICKEREL-WEED Family

Pontederia azurea Sw. Fl. Ind. Occ. 609. 1797.
Piaropus azureus Raf. Fl. Tell. 2: 82. 1837.
Eichhornia azurea Kunth, Enum. 4: 129. 1843.

An aquatic plant, inhabiting shallow water, rooting in the mud, its stems stout, one to two feet long, or longer, sending out many roots from the nodes, and usually branched. The leaves are alternate, rather dark green; the petioles are stout, sheathing, from about four inches to over a foot long and half an inch thick toward the base, gradually tapering upward; the blades are firm in texture, orbicular, oval or obovate, from two to six inches long, very delicately and closely parallel-veined, with a tipped or sometimes notched apex and a gradually or abruptly narrowed base. The flowers are in spikes two to six inches long, borne on stout peduncles which arise at the base of the sheathing petioles; the spike, subtended by a spathe about two inches long, consists of several, showy, violet-purple to blue flowers, which are slightly irregular and two-lipped, somewhat hairy, and from one and one-half to two inches wide when fully expanded, with a double yellow spot on one of the segments; the corolla is short-salverform, with a split tube nearly as long as the segments, the three outer of which are oblong, about one third of an inch wide and entire-margined, the three inner obovate, about half an inch wide and minutely scalloped. There are six stamens, of different lengths. The pistil consists of a three-celled ovary containing many minute ovules and a short or long style tipped by a small stigma. The fruit is a many-seeded capsule; when ripe the fruiting spike curves downward and becomes submersed.

The plant inhabits lakes, ponds and rivers in Jamaica, Cuba, Hispaniola, and Trinidad, and is distributed on the continent from Nicaragua to Bolivia, Venezuela, and Uruguay. In Brazil, it is known under the names Culhereira and Camalote. It is related to the Floating Water Hyacinth, *Piaropus crassipes*, also native of continental tropical America but probably not of the West Indies, which has been introduced into Florida, Cuba, Bermuda and Jamaica, and has become one of the most troublesome of aquatic weeds, often blocking rivers and ditches by its vigorous growth, or

completely covering lakes and ponds; this has similar, somewhat larger flowers, but its petioles are inflated and bladder-like, enabling the plant to float freely. Both species show trimorphism, having stamens and styles of three different lengths in different flowers.

Both are in cultivation under glass at the New York Botanical Garden, and are also grown here in a pond at the herbaceous garden during the summer, where the first touch of frost kills them promptly.

The plant here illustrated was sent to us from Fairmount Park, Philadelphia, in 1905.

N. L. BRITTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Flower opened. Fig. 3.—Leaf.

SOLIDAGO ALTISSIMA

(Plate 75)

SOLIDAGO ALTISSIMA

Tall Goldenrod

Native of the eastern United States

Family CARDUACEAE — THISTLE Family

Solidago altissima L. Sp. Pl. 878. 1753.
Solidago canadensis scabra T. & G. Fl. N. Am. 2: 224. 1842.

The stems of this perennial herb arise from creeping rootstocks; they are two to eight feet high and are cinereous puberulent, pubescent, or hirsute. The alternate leaves are very numerous and decrease gradually in size from the base to the top of the stem. They are lanceolate and strongly three-nerved and the lower are sharply serrate and petioled, while the upper are less serrate or nearly entire and sessile; they are minutely pubescent or rough above and short-hairy beneath, and usually are two to six inches in length and one third of an inch to an inch in width. The heads are very numerous, short-stalked and secund on the spreading or recurved branches of the ample pyramidal panicle. Each involucre is from one eighth to one fifth of an inch high and contains nine to fifteen flowers with short yellow rays and somewhat fewer disk-flowers without rays. The bracts of the involucre are linear and blunt or slightly pointed and rather thin. The achenes are glabrous or slightly pubescent.

This is the most abundant and best-known species of golden-rod in many sections of the eastern half of the United States, and often thrives so well that it might well be regarded as a weed. It flowers from August to November and is found in various situations, but prefers dry soil and a sunny exposure. It occurs from Maine to Georgia and west at least as far as Nebraska and Texas, while plants from still further west are very closely related.

Its botanical history commenced before 1728, for in that year Martyn (Hist. Pl. 14. *tl. 14*) published a good colored plate of the plant, under the name "Virga aurea altissima serotina, panicula speciosa patula" which name was taken by him from a previous publication by Isaac Rand, which I have not seen. Later on, in 1753, Linnaeus seems to have had a clear conception of the species. At any rate he kept it distinct from another species of more northern range, which he named *Solidago canadensis*. Later botanists overlooked the distinctions between these species and as a result the plant we are now considering passed as *Solidago canadensis* for

many years, and it is under this name that it is usually found in local floras and lists published before the last ten years. True *Solidago canadensis*, which in the vicinity of New York is an uncommon species, is however readily distinguished by its markedly smaller involucres; in addition it strongly tends to being less pubescent and to having more sharply serrate leaves.

The illustration was prepared from a plant growing wild on the grounds of the New York Botanical Garden.

KENNETH K. MACKENZIE.

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Leaf. Fig. 3.—Head, × 3.

PENTAPTERYGIUM SERPENS

(Plate 76)

PENTAPTERYGIUM SERPENS

Red-flowered Whortle-berry

Native of the eastern Himalayan Region

Family VACCINIACEAE HUCKLEBERRY Family

Pentapterygium serpens Klotzsch, Linnaea **24**: 47. 1851.

From a long, lobed, tuberous rootstock, one or two feet long, arise the pendulous branching stems which are two to four feet long and pubescent with spreading gland-tipped hairs. The evergreen coriaceous leaves are arranged in a somewhat two-ranked manner, and measure from a half to nearly an inch long; they are deep green above, paler beneath, less than one half as wide as long, elliptic to ovate-lanceolate, nearly sessile, rounded at the base, acute at the apex, with the margin serrate above the middle. The solitary flowers are axillary, pendulous, on pubescent pedicels usually shorter than the leaves, with two small pink bracts at the base. The five-winged calyx-tube is one quarter to three eighths of an inch long, is sparsely setose, and has short acutish ovate lobes. The pubescent corolla is from one to one and a quarter inches long, five-angled, bright red, marked with darker v-shaped lines; it is a little enlarged above the base, and somewhat contracted at the apex where there are five small ovate recurved acute lobes. The stamens are included; the broad short filaments are free and incurved; the anthers reach nearly to the apex of the corolla, the terminal half very slender and opening by slits. The slender straight style is included and bears a capitate stigma.

This plant is a native of the humid forests of Sikkim and Bhotan, growing usually at elevations between 3,000 and 8,000 feet, inhabiting the branches of trees, or more rarely growing on moist rocks. It may be successfully grown as a basket plant in a humid hot house. The plant from which this illustration was made was secured by exchange with the Royal Gardens, Kew, England.

Pentapterygium is a small genus of about six species, all but one of them natives of the Himalayan region, the exception being found in the Malay Peninsula.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Stamens. Fig. 3.—Single stamen, side view, × 2. Fig. 4.—Flower, petals and stamens removed. Fig. 5.—Cross-section of ovary, × 4.

FREYLINIA LANCEOLATA

(Plate 77)

FREYLINIA LANCEOLATA

Lance-leaved Freylinia

Native of southern Africa

Family SCROPHULARIACEAE FIGWORT Family

Capraria lanceolata L. f. Suppl. 284. 1781.
Freylinia oppositifolia Spin, Jard. St. Sebast. ed. 2. 13. 1812.
Freylinia cestroides Colla, Hort. Ripul. 56. 1823.
Freylinia lanceolata G. Don, in Sweet, Hort. Brit. ed. 3. 523. 1839.

This is an attractive shrub, freely branching, sometimes a dozen feet high, with wand-like greenish four-sided branches and orange-yellow flowers. The leaves are linear or linear-lanceolate, and are up to five inches long and three-quarters of an inch broad; they are usually opposite, or occasionally in threes, acute at the apex, and sessile or nearly so. The inflorescence is many-flowered, up to eight inches long, each flower about a half inch long. The calyx is short, with short ovate obtuse lobes. The orange-yellow corolla is funnel-shaped; the tube is slightly enlarged upward and about three eighths of an inch long, sparingly hairy inside, glabrous outside; the limb is from a quarter to three eighths of an inch in diameter, the five spreading lobes ovate. The stamens are included, four in number, and usually with a short and sterile fifth. The style is about as long as the tube of the corolla. The capsule is about a quarter of an inch long or a little more.

This is one of the most attractive shrubs for the cool greenhouse. The illustration was prepared from a plant which has been in the collection of the New York Botanical Garden for about fifteen years.

Freylinia is a small genus of about four species, all natives of southern Africa. It is of the same tribe to which belong *Phygelius* and *Russelia*, two greenhouse shrubs common in cultivation, and *Scrophularia*, *Chelone*, and *Pentstemon*, which include some of the best known and showy members of our wild and garden floras.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Flower opened, showing fertile stamens and the short sterile fifth stamen, × 2.

ANNESLIA TWEEDIEI

(Plate 78

ANNESLIA TWEEDIEI

Tweedie's Calliandra

Native of South America

Family MIMOSACEÆ — MIMOSA Family

Calliandra Tweediei Benth. Jour. Bot. Hook. 2: 140. 1840.
Annesleya Tweediei Lindm. Bih. Sv. Vet.-Akad. Handl. 24⁷: 51. 1898.

A branching shrub or small tree up to five feet high, with smooth, grayish-green twigs, marked with small excrescences near the tips. The leaves, subtended by two lanceolate, acute stipules, are alternate, bipinnate, with four to five primary divisions, each with twenty to thirty pairs of leaflets. The leaflets are oblong, obtuse, less than half an inch long, nearly glabrous, with scattered hairs on the margins. From buds with thick, persistent scales, in the axils of the upper leaves, slightly woolly peduncles develop bearing globose clusters of about twelve short-pedicelled flowers. The flower has a silky yellowish-green campanulate calyx and corolla, each with five erect lobes, those of the calyx being short, triangular, and acute, those of the corolla longer, lanceolate, and reddish-tipped. The inconspicuous pistil is surrounded by the mass of stamens, which are one to two inches long, with small anthers, and bright red glossy filaments. The fruit is a brown, flattened, woody pod, with hairy sides and conspicuously thickened edges.

The genus *Anneslia* was first described by Salisbury in his Paradisus Londinensis in 1807, and later as *Calliandra* by Bentham in 1840, to include certain species of mimosa-like plants readily distinguished from *Inga*, *Acacia*, and related genera. It now includes about one hundred species growing in the American tropics. *Anneslia Tweediei* is a native of Brazil, Argentina and Uruguay, where it was found growing on hillsides by the collector for whom it was named, James Tweedie. He was a Scotch landscape gardener who botanized in these countries between 1825 and 1845. The first cultivated plants were raised from seeds sent by Tweedie to the Botanical Garden at Glasnevin, Ireland, in 1843.

Plants of *Anneslia Tweediei* have been grown in the greenhouses of the New York Botanical Garden since 1901. The particular plant from which the illustration was made is now nearly five feet high, is of a spreading rather bushy habit, and blooms throughout a long season each winter. Its attractiveness lies almost wholly in the beautiful clusters of stamens.

KENNETH R. BOYNTON.

EXPLANATION OF PLATE. Fig. 1.—Flowering branch. Fig. 2.—Flower. Fig. 3.—Calyx and corolla, opened. Fig. 4.—Staminal tube. Fig. 5.—Pistil.

PLATE 79

ADDISONIA

CRASSULA QUADRIFIDA

(Plate 79)

CRASSULA QUADRIFIDA

Four-parted Crassula

Native of the Cape of Good Hope

Family CRASSULACEAE — ORPINE Family

Crassula quadrifida Baker, in Saund. Ref. Bot. *pl. 298.* 1871.

This is a glabrous perennial with fleshy dotted leaves and ample clusters of white flowers tinged with red. The stems are a foot or two high, fleshy. The leaves are entire, opposite, decussate and widely spreading, the upper surface an apple-green with numerous pustular dots, the lower surface paler; the lower leaves are two to three inches long, obtuse, sometimes notched at the apex, narrowed abruptly at the base into a flattened petiole which is shorter than the blade; the roundish uppermost leaves are smaller and sessile or nearly so. The inflorescence is a thyrse of numerous flowers, the branches ascending. The flowers are about three eighths of an inch in diameter, the parts in fours; the calyx is small, the lobes short and deltoid; the corolla is of lanceolate and widely spreading acute petals a little less than a quarter of an inch long, white tinged with red, the color much darker in the bud. The stamens are a little shorter than the petals, as are also the carpels.

This is a charming little plant for the cool greenhouse, responding readily to fair treatment and producing for a considerable period a wealth of star-like blossoms. The illustration was prepared from a plant which has been in the collections of the New York Botanical Garden since 1901, secured in an exchange with the Royal Gardens, Kew, England.

The genus *Crassula,* confined to the Old World, comprises about two hundred known species, mainly of the southern part of Africa, with a few in its tropical parts, and scattered representatives in Abyssinia and the Himalayan region. The members of this genus are commonly perennial herbs or shrubs, few being annuals. Their flowers have the parts mostly in fives or more, the species here considered being unusual in having the parts in fours, from which circumstance is derived its specific name.

GEORGE V. NASH.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Flower, × 2. Fig. 3.—Pistils, × 3.

ASTER CORDIFOLIUS

(Plate 80)

ASTER CORDIFOLIUS

Blue Wood Aster

Native of the eastern United States and Canada

Family CARDUACEAE — THISTLE Family

Aster cordifolius L. Sp. Pl. 875. 1753.

A perennial herb, commonly two to four feet high, with flexile freely branching stems that are glabrous or nearly so. The leaves are dull green, thin, somewhat rough to the touch on the upper surface, and are rarely without some small scattered hairs both above and beneath. Those of the main stem are heart-shaped and acuminate, with serrate margins, the blades borne on slender stalks that are minutely ciliate. Upwardly the leaves become gradually shorter stalked and less deeply cordate, on the stems taking an even margin and narrowed sessile base. The numerous heads, in panicled clusters, are from one half to three quarters of an inch broad, their involucral cup cylindric, becoming slightly broadened above, and composed of linear-oblong bracts having greenish tips. The rays, ten to twenty in number, are, in different plants, of various, usually pale, shades of violet or blue. The small clusters of disk flowers are yellow changing to purplish rose color.

Perhaps no other groups of our native plants have found clearer reflection in the poetry and literature of our country than the asters and goldenrods, and yet, outside of botany, the very numerous members of these companion groups remain little known. The aster of our illustration finds its place somewhere between the more showy kinds and the host of smaller white flowered forms that, more especially, are collectively known as Michelmas daisies. It is of wide range, from New Brunswick to Minnesota, and south to Missouri and the mountains of Georgia, and in its places of abundance is a prominent although unostentatious member of its tribe. Its flowers are very numerous, and more than in most of our asters are disposed to top the leafy stems and branches in dense clusters. The plants, too, like to come together in extensive groups, by this habit producing massed effects of color along thickets and wood borders that become a feature of the late autumn; for it is among the later asters and well resists the advancing season.

This is one of those plants whose variations take it into wide divergencies, and even confused relationships with allied species, giving problems about which botanists are not yet agreed. So

variable a plant may be conceived of as having place in its genealogical system at the growing end of its particular branch, impelled at that point of intensified unfoldment to far greater energy of variation than are more quiescent species that, stranded beside the main current of their family course, are left without the impulse to go forward into ready or tenacious deviations.

Even more than this species other asters, notably the white wood aster (*Aster divaricatus* L.) and the New York aster (*Aster Novi-Belgii* L.) are prone to this truancy from the parental bounds, and the genus as a whole, with its multitude of related forms and its many subgeneric offshoots, may well be viewed as being itself terminal in position on some progressive branch of a strong family stem.

The flowers of the blue wood aster by an occasional striking change appear with rays of purest white.

EUGENE P. BICKNELL.

EXPLANATION OF PLATE. Fig. 1.—Flowering stem. Fig. 2.—Leaf. Fig. 3.—Involucre, × 2.

INDEX

Bold-face type is used for the Latin names of plants illustrated; SMALL CAPITALS for Latin names of families illustrated and for the names of the authors of the text; *italics* for other Latin names, including synonyms.

Abelia, Hybrid, 17
Abelia, 18
chinensis, 18
grandiflora, 17, *plate 49*
rupestris, 17
rupestris grandiflora, 17
uniflora, 18
Acacia, 75
Actaea Cimicifuga simplex, 35
AESCULACEAE: *Aesculus parviflora, pl. 63*
Aesculus
macrostachya, 45
parviflora, 45, *plate 63*
ALISMACEAE: *Sagittaria latifolia, pl. 54*
Alstroemeria edulis, 49
AMARYLLIDACEAE: *Bomarea edulis, pl. 65*
Amaryllis family, 49
Anneslia Tweediei, 75, *plate 78*
Apple, Mock, 47
Apple family, 59
Arrow-head, Broad-leaved, 27
Aster,
Amethyst, 39
Blue Wood, 79
New York, 80
Tatarian, 51
White Wood, 80
Aster
amethystinus, 39, *plate 60*
bostoniensis, 39
cordifolius, 79, *plate 80*
divaricatus, 77
Novae-Angliae, 39
Novi-Belgii, 77
oblongifolius, 39
tataricus, 51, *plate 66*

Baccharis halimifolia, 29, *plate 55*
Balsam Apple, Wild, 47
Bear-grass, 2
Beaucarnea texana, 1
Benthamia, 6
capitata, 6
japonica, 5, *plate 43*
Kousa, 5
BICKNELL, EUGENE PINTARD: *Aster cordifolius,* 79; *Baccharis halimifolia,* 29
Bomarea, Edible, 49
Bomarea, 49
edulis, 49, *plate 65*
BOYNTON, KENNETH ROWLAND: *Anneslia Tweediei,* 75; *Aster amethystinus,* 39; *Aster tataricus,* 51; *Buddleia Davidi,* 9; *Centradenia floribunda,* 65; *Cimicifuga simplex,* 35; *Xanthisma texanum,* 31
BRITTON, NATHANIEL LORD: *Harrisia gracilis,* 41; *Harrisia Martini,* 55; *Peperomia obtusifolia,* 19; *Piaropus azureus,* 67
Buckeye, Small-flowered, 45
Buckeye family, 45
Buddleia, 9
asiatica, 9
Colvillei, 9
Davidi, 9, *plate 45*
Davidi magnifica, 9
Davidi Veitchiana, 9
officinalis, 9
variabilis, 9
Bugbane, Kamchatkan, 35
Bunch-grass, 2
Butterfly bush, 9

CACTACEAE: *Harrisia gracilis, pl. 61; Harrisia Martini, pl. 68; Werckleocereus glaber, pl. 47*
Cactus family, 13, 41, 55
Calliandra, Tweedie's, 75

Calliandra Tweediei, 75
Camalote, 67
Capraria lanceolata, 71
CAPRIFOLIACEAE: *Abelia grandiflora, pl. 49*
CARDUACEAE: *Aster amethystinus, pl. 60; Aster cordifolius, pl. 80; Aster tataricus, pl. 66; Baccharis halimifolia, pl. 55; Solidago altissima, pl. 75; Solidago juncea, pl. 51; Xanthisma texanum, pl. 56*
Catasetum, Green and Yellow, 25
Catasetum viridiflavum, 25, *plate 53*
Centauridium Drummondii, 31
Centradenia, Many-flowered, 65
Centradenia
floribunda, 65, *plate 73*
grandifolia, 65
inaequilateralis, 65
Cereus
glaber, 13
gracilis, 41
Jamacaru, 13
Martini, 55
repandus, 41
subrepandus, 41
Chelone, 73
Cimicifuga
acerina, 35
japonica, 35
simplex, 35, *plate 58*
CORNACEAE: *Benthamia japonica, pl. 43*
Cornus
japonica, 5
Kousa, 5
Coryanthes, 12
Cotyledon, 15
Pachyphytum, 53
Crassula, Four-parted, 77
Crassula quadrifida, 77, *plate 79*
CRASSULACEAE: *Crassula quadrifida, pl. 79; Dudleya Brandegei, pl. 48; Echeveria multicaulis, pl. 52; Pachyphytum bracteosum, pl. 67; Sedum Bourgaei, pl. 57*
Crowfoot family, 35
CUCURBITACEAE: *Micrampelis lobata, pl. 64*
Culhereira, 67
Cynoxylon, 6
floridum, 5

Daisy, Michelmas, 79
Dasylirion, 2
Dendrobium, Deep Purple-lipped, 63
Dendrobium atroviolaceum, 63, *plate 72*
Devil's-shoestring, 1
Dildo, 42
Dircaea, 8
magnifica, 7, *plate 44*
Dogwood,
Flowering, 5
Japanese Flowering, 5
Dogwood family, 5
DRACAENACEAE: *Nolina texana, pl. 41*
Dudleya, Brandegee's, 15
Dudleya, 15
Brandegei, 15, *plate 48*

Echeveria, Many-stemmed, 23
Echeveria, 15
bracteosa, 53
multicaulis, 23, *plate 52*
Pachyphytum, 53
Echinocystis lobata, 47
Eichhornia azurea, 67
Elder,
Marsh, 30
Mash, 30
Epidendrum, Short-leaved Cuban, 43
Epidendrum
brevifolium, 43
oblongatum, 43, *plate 62*
phoeniceum, 43
phoeniceum vanillosmum, 43
Eriocereus, 55
Martini, 55
Eucalyptus, 38
Euphorbia
benedicta, 3
fulgens, 4
EUPHORBIACEAE: *Trichosterigma benedictum, pl. 42*

Feijoa, 37
Sellowiana, 37, *plate 59*
Figwort family, 73
Flowering Dogwood, 5
Japanese, 5

Freylinia, Lance-leaved, 73
Freylinia
cestroides, 73
lanceolata, 73, *plate 77*
oppositifolia, 73

Gesneria, Magnificent, 7
Gesneria, 8
bulbosa, 7
magnifica, 7
Gesneria family, 7
GESNERIACEAE: *Dircaea magnifica, pl. 44*
Goldenrod,
Early, 21
Tall, 69
Gongora, White-lipped Truncate, 11
Gongora, 11
truncata alba, 11, *plate 46*
Gourd family, 47
Guava, Pineapple, 37

Harrisia,
Jamaica, 41
Martin's, 55
Harrisia, 42, 55
gracilis, 41, *plate 61*
Martini, 55, *plate 68*
Holy-Ghost flower, 12
Honeysuckle family, 17
Huckleberry family, 71
Hyacinth
Floating Water, 67
Light-Blue Water, 67
Hylocereus, 13

Inga, 75

Juncus, 22

Lilac, Summer, 9
Linnaea, 18
Lizard's-tail, 20
Logania family, 9
LOGANIACEAE: *Buddleia Davidi, pl. 45*

MACKENZIE, KENNETH KENT: *Solidago altissima*, 69; *Solidago juncea*, 21
Meadow-beauty family, 65
MELASTOMACEAE: *Centradenia floribunda, pl. 73*
Micrampelis lobata, 47, *plate 64*
MILLSPAUGH, CHARLES FREDERICK: *Trichosterigma benedictum*, 3
Mimosa family, 75
MIMOSACEAE: *Anneslia Tweediei, pl. 78*
Mock Apple, 47
Momordica echinata, 47
MYRTACEAE: *Feijoa Sellowiana, pl. 59*
Myrtle family, 37
Myrtus communis, 38

NASH, GEORGE VALENTINE: *Abelia grandiflora*, 17; *Benthamia japonica*, 5; *Bomarea edulis*, 49; *Catasetum viridiflavum*, 25; *Crassula quadrifida*, 77; *Dendrobium atroviolaceum*, 63; *Epidendrum oblongatum*, 43; *Feijoa Sellowiana*, 37; *Freylinia lanceolata*, 73; *Gongora truncata alba*, 11; *Oncidium pubes*, 57; *Pentapterygium serpens*, 71; *Raphiolepis ovata*, 59; *Rosa "Silver Moon,"* 61
Nolina texana, 1, *plate 41*

Oncidium, Hairy, 57
Oncidium pubes, 57, *plate 69*
Orchid, 11
Orchid family, 11, 25, 43, 57, 63
ORCHIDACEAE: *Catasetum viridiflavum, pl. 53*; *Dendrobium atroviolaceum, pl. 72*; *Epidendrum oblongatum, pl. 62*; *Gongora truncata alba, pl. 46*; *Oncidium pubes, pl. 69*
Orpine family, 15, 23, 33, 53, 77
Orthostemon Sellowianus, 37

Pachyphytum, Large-bracted, 53
Pachyphytum
bracteosum, 53, *plate 67*
longifolium, 53
Pencil Bush, 29
Pentapterygium, 71
serpens, 71, *plate 76*
Pentstemon, 73
Peperomia, Blunt-leaved, 19
Peperomia, 20
obtusifolia, 19, *plate 50*

Peperomia
septentrionalis, 20
Pepper family, 19
Peristeria elata, 12
Phygelius, 73
Piaropus
azureus, 67, *plate 74*
crassipes, 67
Pickerel-weed family, 67
Piper obtusifolia, 19
PIPERACEAE: *Peperomia obtusifolia, pl. 50*
Pityrosperma acerinum, 35
POMACEAE: *Raphiolepis ovata, pl. 70*
Pontederia azurea, 67
PONTEDERIACEAE: *Piaropus azureus, pl. 74*
Pourpier de bois, 19

Queue-de-lézard, 19

RANUNCULACEAE: *Cimicifuga simplex, pl. 58*
Raphiolepis, Seacoast, 59
Raphiolepis ovata, 59, *plate 70*
Rosa
devoniensis, 61
laevigata, 61
odorata, 61
" Silver Moon," 61, *plate 71*
Wichuraiana, 61
Wichuraiana x *devoniensis*, 61
Wichuraiana x *laevigata*, 61
ROSACEAE: *Rosa "Silver Moon," pl. 71*
Rose,
Cherokee, 61
" Silver Moon," 61
Tea, 61
Rose family, 61
ROSE, JOSEPH NELSON: *Dudleya Brandegei*, 15; *Echeveria multicaulis*, 23; *Pachyphytum bracteosum*, 53; *Sedum Bourgaei*, 33; *Werckleocereus glaber*, 13
RUSBY, HENRY HURD: *Dircaea magnifica*, 7
Russelia, 73

Sagittaria
latifolia, 27, *plate 54*
Sagittaria
sagittifolia, 27
sagittifolia variabilis, 27
variabilis, 27
Saururus, 19
cernuus, 20
Scrophularia, 73
SCROPHULARIACEAE: *Freylinia lanceolata, pl. 77*
Sedum, Bourgeau's, 33
Sedum Bourgaei, 33, *plate 57*
Sicyos lobata, 47
SMALL, JOHN KUNKEL: *Aesculus parviflora*, 45; *Nolina texana*, 1; *Sagittaria latifolia*, 27
Solidago
altissima, 69, *plate 75*
canadensis, 69
canadensis scabra, 69
juncea, 21, *plate 51*
Spurge, Saint Benedict, 3
Spurge family, 3
Stanhopea, 12
Thistle family, 21, 29, 31, 39, 51, 69, 79
Trichosterigma, 4
benedictum 3, *plate 42*
californicum, 4
fulgens, 4
Hindsianum, 4
miserum, 4

VACCINIACEAE: *Pentapterygium serpens, pl. 76*

Water Hyacinth,
Floating, 67
Light-Blue, 67
Water-plantain family, 27
Weberocereus, 13
Werckleocereus, Glabrate, 13
Werckleocereus, 13
glaber, 13, *plate 47*
Tonduzii, 13
Whortle-berry, Red-flowered, 71
WILSON, PERCY: *Micrampelis lobata*, 47

Xanthisma, Texas, 31
Xanthisma texanum, 31, *plate 56*

Yucca family, 1